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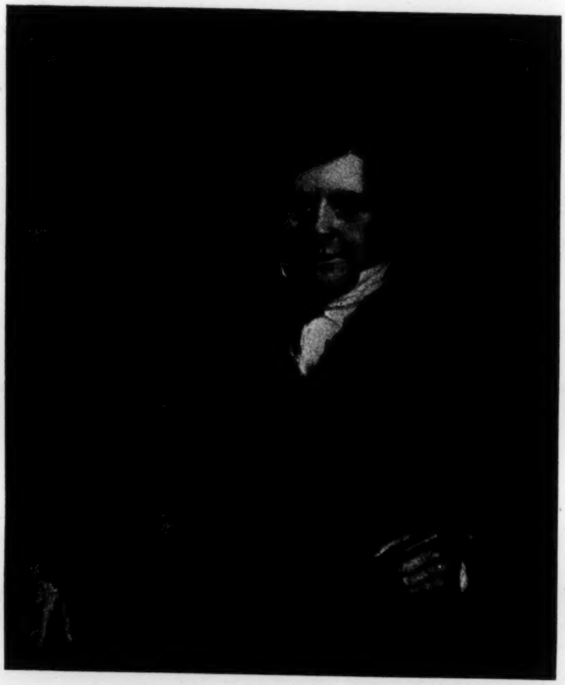


SIR RICHARD BRIGHT

[1789-1858]

[From Neander: Tabacologia. Elzevir, Lugduni Batavorum, 1626.]

ANNALS OF MEDICAL HISTORY

Volume IX Winter, 1927 Number 4

PYGMIES, DWARFS AND HUNCHBACKS IN ANCIENT EGYPT

By WARREN R. DAWSON, F.S.A. (Scot.), F.R.S.M. (Lond.)

LONDON, ENGLAND

THE Pharaohs of Egypt, and their nobles, from the earliest times delighted to have in their households dwarfs and other misshapen human beings. This peculiar taste had a very wide distribution both in space and time, and it survived till recent years. To this fancy we owe the existence of a number of pictures, statues and drawings in the monumental records of Egypt, many of which supply us with pathological features of great interest, and all of which have an important bearing on the history of medicine.

It is curious that in the works of many modern writers pygmies and dwarfs should be spoken of almost as if they were synonymous terms. The ancient Egyptians themselves distinguished between pygmies, i.e. the normally small races of men from the interior of Africa, and dwarfs, which are pathological cases drawn from their own population.

Pygmies

In the tomb of an Egyptian noble named Harkhuf, at Assuan, there is an interesting inscription which refers to pygmies. Harkhuf made four journeys to Southern Nubia, from whence he travelled westward. Three of these journeys were made in the reign of Merenrē, and the fourth in that of Pepy II, kings of the Sixth Dynasty (*ca.* 2600 B.C.). Whilst on this last journey, Harkhuf wrote to the king reporting that he had secured a pygmy (Egyptian *d'ng*). His letter has not survived, but the king's reply is copied on the walls of the tomb. The original letter must have spoken of the pygmy as a wild and fierce creature continually seeking escape, for the king's reply gives explicit directions to his official as to how he should act. Reference must also have been made to a pygmy brought to Egypt by one Burded in the reign of the Pharaoh Isesi of the Fifth Dynasty (*ca.* 2700 B.C.). These references can be inferred from the king's letter, which opens with an acknowledgment of his minister's communication, and proceeds as follows:

> Come northward to the Court immediately . . . thou shalt bring this dwarf with thee, which thou bringest living, prosperous and healthy from the land of spirits, for the dances of the god, to rejoice and gladden the heart of the king of Upper and Lower Egypt Neferkere (i.e. Pepy II) who lives for ever. When he (the pygmy) goes down with thee to the vessel, appoint excellent people, who shall be beside him on each side of the vessel; take care lest he fall into the water. When he sleeps at night, appoint excellent people who shall sleep beside him in his tent: inspect ten times a night. My majesty desires to see this dwarf more than the gifts of Sinai and of Punt. If thou arrivest at court, this dwarf being alive prosperous and healthy, my majesty will do for thee a greater thing than that which was done for the treasurer of the god Burded in the time of Isesi, according to the heart's desire of my majesty to see this dwarf.[1]

Professor Breasted, whose translation is quoted above, uses the word "dwarf." The Egyptian word is *d'ng*, which means "pygmy," the word for "dwarf" being *nemiw*, as we shall presently see. In commenting upon this inscription in his "History of Egypt," Professor Breasted evidently confused pygmies and dwarfs, for he says that Harkhuf "returned bringing a rich pack train and a dwarf from one of the pygmy tribes of Central Africa. These uncouth, bandy-legged creatures were highly prized by the noble class in Egypt; they were not unlike the merry genius Bes in appearance, and they executed dances in which the Egyptians took the greatest delight."[2] He refers to two illustrations, both of which represent not pygmies, but achondroplastic dwarfs.

The late Sir Gaston Maspero, in an illuminating commentary on the inscription of Harkhuf,[3] points out that a reference is made in the "Pyramid Texts" to the pygmy *d'ng* "who dances the dance of the god,"[4] but both here and elsewhere in his writings, he appears to harbour the same confusion between pygmies and dwarfs. I know of no Egyptian representations of dancing pygmies, but there is in the Cairo Museum a bronze statuette of a pygmy (Fig. 25). This figurine has been made deliberately grotesque, but there can be no doubt that an African pygmy is intended. The artist has exaggerated the protrusion of the belly and the enlargement of the navel: these throw into contrast the lean ribs and prominent clavicles. The grotesque fancy has led him to fashion the nose crooked and the mouth awry, but the negroid characters are plainly marked. (Compare Fig. 48, sketched from a living pygmy.) In the great temple of Bubastis a bas-relief represents three figures which I believe to be pygmies (Fig. 12). They are clearly not achondroplastic dwarfs, and although of short stature (the tops of their heads just reach the level of the shoulders of the Egyptians represented in the same scene), they have well-proportioned bodies without pathological deformity, and a slight tendency to steatopygia is indicated. This example dates from the reign of Osorkon II of the Twenty-second Dynasty (*ca.* 860 B.C.). In his remarks on this scene, the late Professor Naville confuses pygmies and dwarfs as other writers have done.[5]

ACHONDROPLASTIC DWARFS

We have evidence of the existence of achondroplastic dwarfs in Egypt in predynastic times and throughout the historic period from the First to the Thirtieth Dynasties. Skeletons of two individuals were found in the royal tombs of the First

---

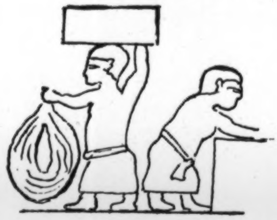
[1] Breasted, J.H. Ancient Records of Egypt, Chicago, 1906., I, §353. It may be explained that in the above, the expression "treasurer of the god" is a priestly title, "Punt" is the Somali Coast of the Red Sea, and the "land of spirits" the vague regions of the interior of Africa.

[2] Breasted J. H. History of Egypt. London, 1919, Ed. 2, pp. 139–140.

[3] Études de Mythologie. Paris, 1893, II, p. 429 ff.

[4] Pyramid Texts. Leipz., 1908, Ed. Sethe, § 1189.

[5] Naville, E. The Festival Hall of Osorkon, II. London, 1892, p. 31.



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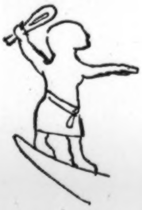

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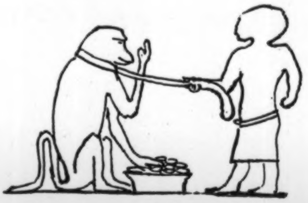

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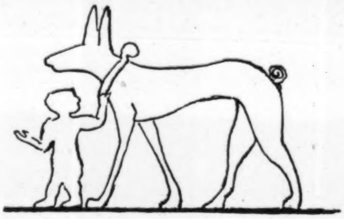

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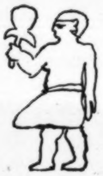

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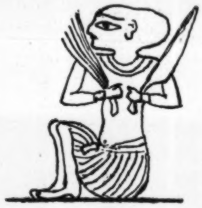

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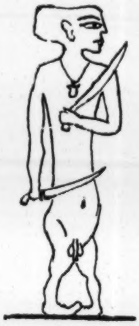

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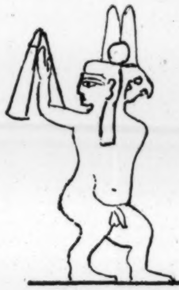

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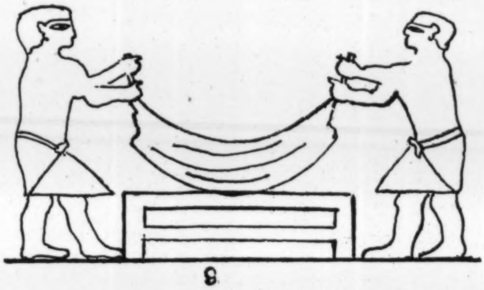

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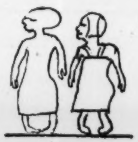

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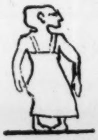

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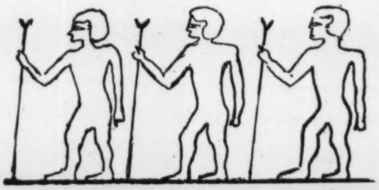

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Fig. 1. Tomb of Anta, Desasheh. Dyn. v. Two Achondroplastic Dwarfs, One Carrying a Bead-collar and a Box, the Other Working at a Table. After Petrie, Desasheh. London, 1898, pl. xiii.

Fig. 2. Same Tomb. Achondroplastic Dwarf Standing in the Prow of a Boat Brandishing a Sling. After Petrie, Op. cit., pl. v.

Fig. 3. Tomb of Serfka, Sheikh Said. Achondroplastic Dwarf with Pet Cercopithecus Monkey in Leash. The Smallness of the Dwarf is Deliberately Exaggerated to Contrast with the Monkey. Dyn. v. After Davies, The Rock Tombs of Sheikh Said. London, 1901, pl. iv.

Fig. 4. Same Tomb. Dwarf Leading a Greyhound. The Sizes of the Two Figures are Deliberately Exaggerated to Produce a Contrast. After Davies, Op. cit. pl. vi.

Fig. 5. Tomb of Aba, Deir el Gebrawi. Dyn. vi. Achondroplastic Dwarf Holding a Mirror. After Davies, The Rock Tombs of Deir el Gebrawi. London, 1902, Part i, pl. xvii.

Fig. 6. Mythological Figure with Deformed Head Based upon an Achondroplastic Dwarf. (One of the Doorkeepers of the Underworld.) After the Papyrus of Ani, pl. xi. Dyn. xix.

Fig. 7. Mythological Figure, Similar to Last. From the Magical Papyrus of Queen Henttowe. Dyn. xxi. Cairo Museum.

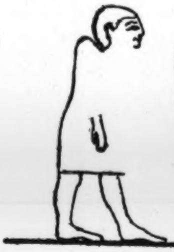
Fig. 8. Mythological Two-headed Figure, Based upon an Achondroplastic Dwarf. From the Book of the Dead. Berlin, 1842, Ed. Lepsius, Chapter 164. Ptolemaic.

Fig. 9. Same Tomb as Fig. 5. Two Achondroplastic Dwarfs Holding a Bead-collar. In the Original there is Another Similar Pair. After Davies, Op. cit. pl. xiii.

Fig. 10. Male and Female Achondroplastic Dwarfs in Attendance upon a Princess. Dyn. xviii. After Davies, The Rock Tombs of el Amarna. Part ii. London, 1905, pl. v.

Fig. 11. Another View of the Male Dwarf Shown in Fig. 10. After Davies, Op. cit. Part ii, pl. viii.

Fig. 12. Three Pygmies Taking Part in a Festival at the Temple of Bubastis. Dyn. xxii. After Naville, The Festival Hall of Osorkon ii. London, 1892, pl. xx, 5.



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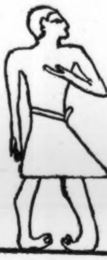

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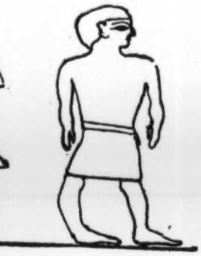

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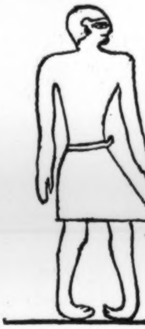

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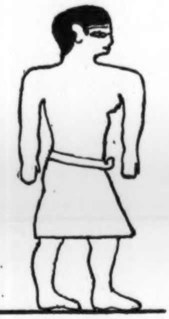

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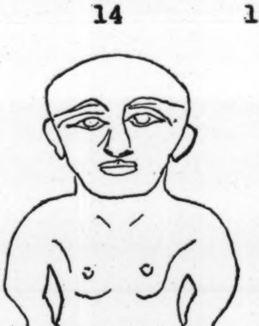

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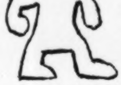

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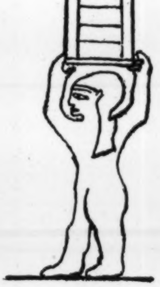

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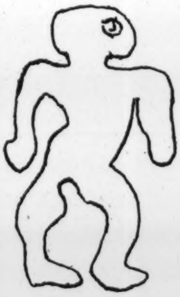

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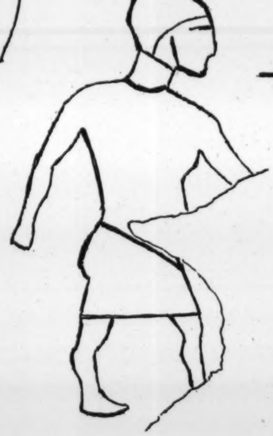

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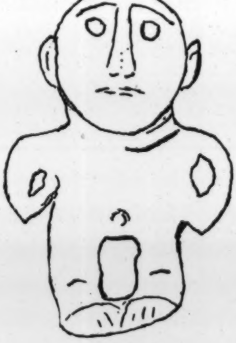

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Fig. 13. Damaged Figure of a Hunchback (Pott's Disease) from a Tomb at Beni Hasan. Dyn. xii. After Newberry, P. E. Beni Hasan. London, 1894, Part ii, pl. xxxii.

Fig. 14. Same Tomb as Fig. 13. Man with Talipes Varus.

Fig. 15. Same Tomb as Last. Achondroplastic Dwarf.

Fig. 16. Tomb of Akhthoy, Beni Hasan, Dyn. xii. Case of Talipes Varus. After Newberry, Op. cit. pl. xvi.

Fig. 17. Same Tomb as Last. Achondroplastic Dwarf.

Fig. 18. Outline of an Achondroplastic Dwarf from a Stone Stele. Dyn. i. After Petrie, Royal Tombs of the First Dynasty. Part i. London, 1900, pl. xxxv. Two Similar Steles are there Figured.

Fig. 19. Amulet in the Form of an Achondroplastic Dwarf. Outline Sketch from a Photograph, after Petrie, Amulets. London, 1914, pl. xxxii. Dyn. xxvi. Petrie Figures a Number of Similar Amulets of Various Periods.

Fig. 20. Tomb of Kamnufer, Hagarseh. Dyn. iv. Female Achondroplastic Dwarf Carrying a Coffer (?). After Petrie, Athribis. London, 1908, pl. i.

Fig. 21. Roughly Executed Stone Stele. Representing an Achondroplastic Dwarf. Dyn. i. Outline Sketch after the Photograph. Petrie, Royal Tombs. Part ii. London, 1901, pl. xxviii, 58.

Fig. 22. Roughly Incised Outline of an Achondroplastic Dwarf. Dyn. i. Outline Sketch after Photograph. Petrie, Abydos. Part i. London, 1902, pl. iv, Fig. 11.

Fig. 23. Limestone Figurine Representing an Achondroplastic Dwarf. Dyn. i or ii. Outline Sketch after the Photograph. Quibell, Hierakonpolis. Part i. London, 1900, pl. xviii, Fig. 19.

Dynasty at Abydos,[6] and the humerus of a third.[7] In the same place were also found two steles on each of which the crude but convincing outline of a dwarf is carved (Fig. 18). At Abydos also, the skeleton of a dwarf dating from the Fifth Dynasty was found, and this is now in the Museum of the Royal College of Surgeons in London. Another skeleton of proto-dynastic age was found by Quibell on the site of the ancient city of Hierakonpolis,[8] and yet another, dating from the Sixth Dynasty, was found by Garstang in a tomb at Beni Hasan.[9] Many years ago Mariette discovered at Sakkara, the necropolis of the ancient capital of Memphis, the tomb of the dwarf Khnumhotp, and in this the famous statue, now in the Cairo Museum, was found. (Figs. 49, 52.) In another part of the same necropolis, Quibell discovered in 1910 the granite sarcophagus of a dwarf named Teos the son of Petekhons, of the Thirtieth Dynasty (Fig. 53). It has recently been announced that early in the present year (1927) the tomb of another dwarf, named Senab, apparently a person of some importance and dating from the Sixth Dynasty, was discovered in the necropolis of Gizeh, near the Great Pyramids. In addition to these actual bones and definite historic records of dwarfs, there exists a number of representations of achondroplastic dwarfs in wall-paintings in tombs of various periods, of which a selection is here reproduced (Figs. 1–5, 9–11, 15, 17, 32, 34, 41). We have also a series of figurines and statues (Figs. 19, 23, 40, 43–47).

The ancient Egyptian word for an achondroplastic dwarf is *nemiw*, and these *nemiw* fulfill various offices and duties sometimes of an important kind, but we have no evidence whatever that they were engaged in performing sacred dances like the *d'ng* or pygmies. They are frequently seen in charge of jewelry (Figs. 1, 9, 32) or of pet animals (Figs. 3, 4, 41) or in personal attendance about their masters (Figs. 5, 10, 11, 15, 17). These dwarfs are generally of the male sex, females being much rarer. In modern times, however, achondroplasia is commoner among females than males. The dwarf represented in Figure 2 stands upon the prow of a boat, and urges the rowers to greater exertions whilst he brandishes a sling: the female in Figure 20 carries a coffer and walks behind a procession of musicians. The dwarf in Figure 5 holds a mirror, whilst that in Figure 40 carries on his shoulders the god Bes. The child in Figure 33 is often spoken of as a dwarf, because he is in charge of tame monkeys, a function frequently performed by dwarfs (cf. Figs. 3, 4, 41): his proportions are, however, those of a normal child, although the artist has deliberately exaggerated his small stature in order to strike a contrast with the relatively large size of the monkeys. The dwarfs Khnumhotp (Fig. 52), Senab, and Teos (Fig. 53) must have been persons of considerable wealth and importance, the two former to have been able to afford costly tombs and the latter a granite sarcophagus. Khnumhotp bore the title of keeper of the royal wardrobe: the inscription on the sarcophagus of Teos, although giving his parentage, throws no light on his functions. In this inscription his name occurs several times, and he is always called "the dwarf (*nemiw*) Teos, the son of Petekhons." The important positions occupied by dwarfs in Ancient Egypt is further indicated by the fact that the skeletons referred to above were found in the royal necropolis.

Generally speaking, these achondroplastic dwarfs are depicted with considerable fidelity to nature. The body is muscular and thickset, the limbs short and the head large.[10] In some cases there is a more or less marked degree of lordosis (Figs. 1, 8,

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[6] Petrie, W. M. F. Royal Tombs. London, 1900, I, p. 13.

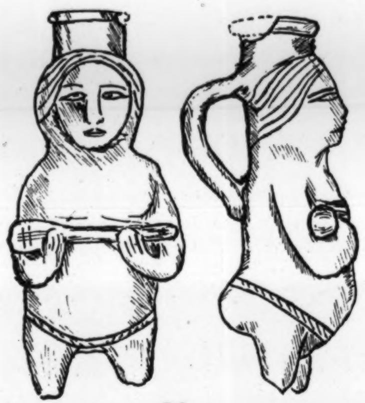
[7] Ibid., II, p. 24.

[8] Quibell and Green, Hierakonpolis, II, p. 26.

[9] Garstang, J. Burial Customs of Ancient Egypt. London, 1907, p. 41.

[10] Poynton, F. J. System of Medicine, Allbutt and Rolleston, 1907, III, p. 117 ff.

32), but generally the spine approximates the form of that of a normal man. The accompanying sketches are not drawn to a uniform scale, but in most cases the heads of the dwarfs reach to waist-level of the normal men in the same scenes. In some instances, however, the artist has resorted to a playful trick of wilful exaggeration, evidently designed to produce a striking effect. Thus in Figures 3, 4 and 41 the dwarfs are drawn on a smaller scale in relation to the animals than could possibly have existed in nature. In Figure 7 the length of the body is evidently exaggerated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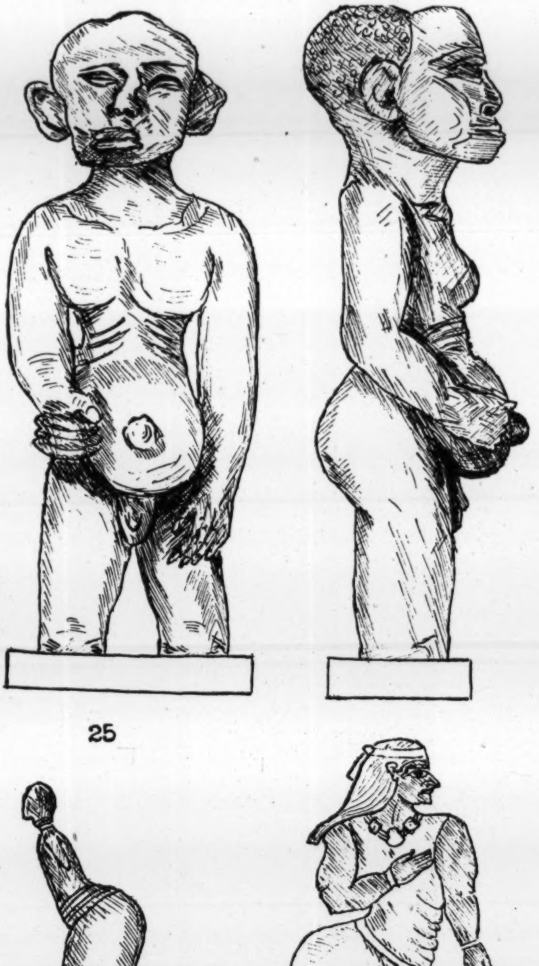
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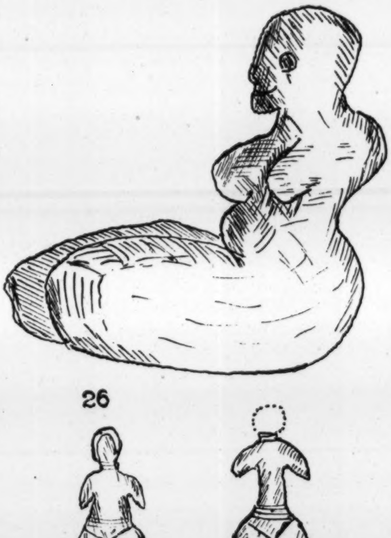
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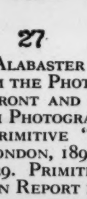
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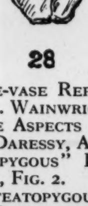
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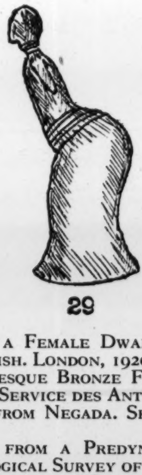
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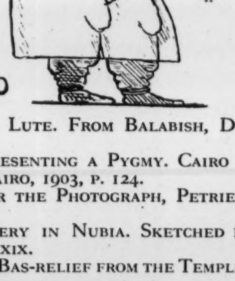
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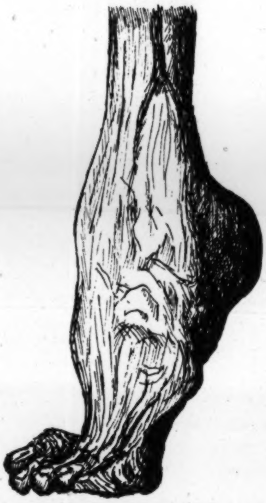
Fig. 24. Alabaster Figure-vase Representing a Female Dwarf Playing a Lute. From Balabish, Dyn. xviii. Sketched from the Photograph. Wainwright. Balabish. London, 1920, pl. xx.

Fig. 25. Front and Profile Aspects of a Grotesque Bronze Figurine Representing a Pygmy. Cairo Museum. Sketched from Photogravure. Daressy, Annales du Service des Antiquites. iv. Cairo, 1903, p. 124.

Fig. 26. Primitive "Steatopygous" Figurine, from Negada. Sketched after the Photograph, Petrie, Naqada and Ballas. London, 1896, pl. vi, Fig. 2.

Figs. 27–29. Primitive "Steatopygous" Dolls from a Predynastic Cemetery in Nubia. Sketched from the Photographs in Report for 1908–9 of the Archaeological Survey of Nubia, pl. xxxix.

Fig. 30. Figure of the "Queen of Punt," Sketched after a Photograph of the Bas-relief from the Temple of Deir el Bahari, now in the Cairo Museum. Dyn. xviii.



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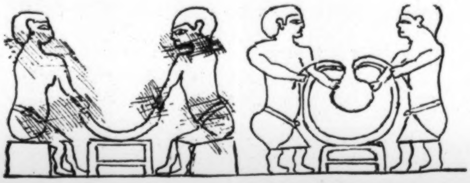

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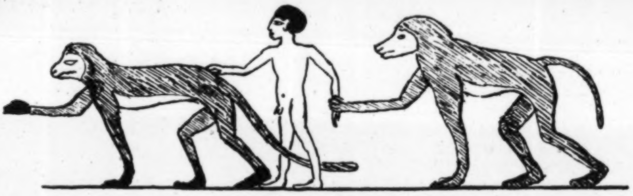

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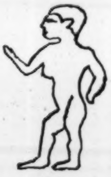

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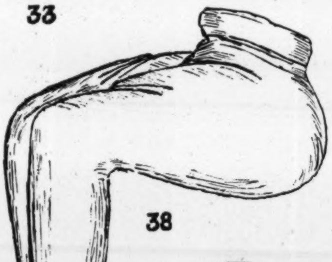

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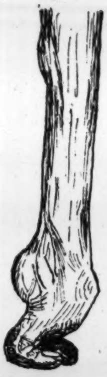

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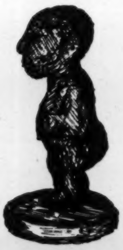

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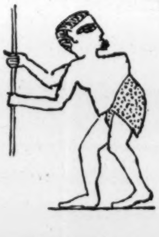

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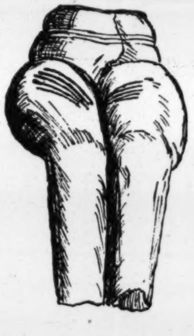

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Fig. 31. Left Foot of the Mummy of the Pharaoh Siptah Deformed by Talipes Equinus. Drawn from a Photograph, Elliot Smith, The Royal Mummies. Cairo, 1912, pl. lxii.

Fig. 32. Achonodrplastic Dwarfs Holding Bead-collars. From the Tomb of Ptah-hotp, at Saqqara. Dyn. v. After Paget and Pirie, The Tomb of Ptah-hepep. London, 1898, pl. xxv.

Fig. 33. Boy, often Wrongly Described as a Dwarf, Leading Pet Monkeys. Tomb of Atet, Medium. Dyn. iv. After Petrie, Medum. London, 1892, pl. xxiv.

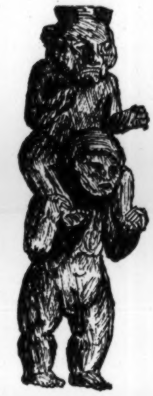
Fig. 34. Female Achondroplastic Dwarf, from the Tomb of Debehn, Gizeh, Dyn. iv. After Lepsius, Denkmäler, Abt. ii, pl. 36, c.

Fig. 35. Talipes Equinus of the Left Foot of a Modern Egyptian *fellah*. Sketched from Photograph. Madden, The Surgery of Egypt. Cairo, 1919, pl. xxxiii, Fig. 3.

Fig. 36. Metal Seal 1½ in. High, Representing an Achondroplastic Dwarf. From Beni Hasan, Dyn. xii. Sketched after the Photograph in Garstang, The Burial Customs of Ancient Egypt. London, 1907, Fig. 230, p. 325.

Fig. 37. Tomb of Ipy, Thebes. Dyn. xix. Gardener Working a *shadûf*. A Case of Pott's Disease. Sketched from a Lithograph.

Figs. 38, 39. Lateral and Frontal Aspects of the Lower Part of a So-called "Steatopygous" Doll, from a Middle Kingdom Grave in Nubia. Sketched after the Photograph in the Report for 1909–10, Archaeological Survey of Nubia, pl. xxxviii, a & b. Note the Tattoo Marks on the Thighs.



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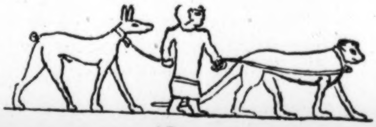

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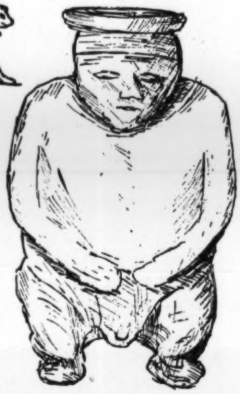

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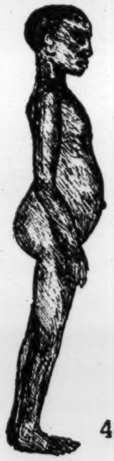

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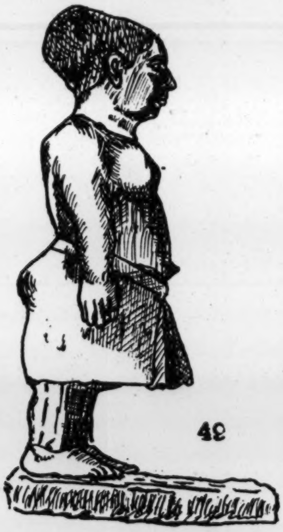

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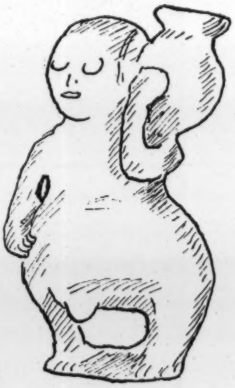

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Fig. 40. Bronze Figurine Representing an Achondroplastic Dwarf Carrying on His Shoulders the God Bes (Himself Based upon a Dwarf). Macgregor Collection, Sale Catalogue, Lot 1310. Sketched after the Photograph, Ibid., pl. xxxv.

Fig. 41. Achondroplastic Dwarf in Charge of Pet Animals, from the Tomb of Kegemni at Sakkara. Dyn. vi. After Bissing, Die Mastaba des Gemnikai. Berlin, 1905, i, pl. xxiii.

Fig. 42. Arragonite Figure-vase Representing a Dwarf. Macgregor Collection, Lot 1004, and pl. xxvii.

Figs. 43–47. Group of Archaic Ivory Figures of Dwarfs, Male and Female. The Figure in the Kneeling Attitude is Holding the Headless Body of Another Dwarf. Macgregor Collection, Lot 712 and pl. xxiv. From Saoniyeh.

Fig. 48. Sketch of a Living African Pygmy to Show the Outline of the Profile of the Figure.

Fig. 49. Profile View of the Statue of the Dwarf Khnumhotp (See Fig. 52).

Fig. 50. Figure-vase Representing a Male Achondroplastic Dwarf Carrying a Pitcher. Sketched after the Photograph in M. A. Murray, Historical Studies, London, 1911.

in order to produce a grotesque effect. As already mentioned, most of these dwarfs are males, but considerable development of the breasts is usually indicated. Figure 10 represents a pair of achondroplastic dwarfs who habitually accompany one of the princesses in the scenes portrayed in the tombs at Tell el Amarna (Eighteenth Dynasty). They have mock-grandiloquent names and titles: the male is Parē ("the Sun") and the female Erneheh ("forever"), and they are called "the vizier" and "the queen" respectively. In addition to the usual signs of achondroplasia, they have deformities of the feet, and in the case of the male, of the head also.[11]

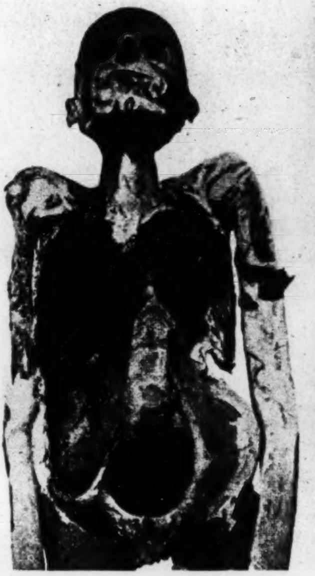

FIG. 51.

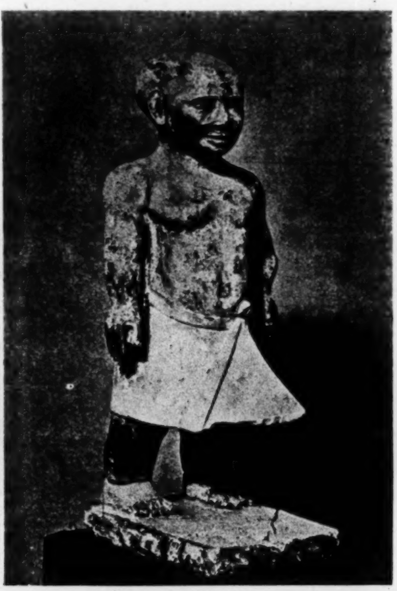

FIG. 52.

FIG. 51. MUMMY OF A PRIEST OF AMUN OF DYN. XXI EXHIBITING A TYPICAL CASE OF POTT'S DISEASE. AFTER ELLIOT SMITH AND DAWSON, EGYPTIAN MUMMIES. LONDON, 1924, FIG. 62.

FIG. 52. PAINTED LIMESTONE STATUE OF THE DWARF KHNUMHOTP FROM HIS TOMB AT SAKKARA, NOW IN THE CAIRO MUSEUM. A TYPICAL ACHONDROPLASTIC DWARF. DYN. VI. (FOR PROFILE SEE FIG. 49.)

The shape of the head varies considerably. It is well known that achondroplastic infants are liable to malformation of the head during parturition, owing to its large size. In some cases, the skull seems quite normal in contour (Figs. 1, 5 etc.), but in others it is dolichocephalous, sometimes to a very marked degree (Figs. 3, 6, 7 etc.). In such cases the occipital region is sometimes rounded in form (Figs. 6, 10), and sometimes square and angular (Figs. 7, 11). It is probable however that Figures 6 and 7 are deliberately exaggerated; in any case it is unwise to place too much reliance upon details of this kind, for Figures 10 and 11, which both represent the same individual, reveal two different cranial contours.

The head of Teos (Fig. 42) is in contrast with all the others, for the brow is high, the top of the head elevated and domed. Dr. J. B. Hurry to whom I am indebted for several valuable suggestions, tells me that its' form suggests that which sometimes results from mal-position during parturition, i.e., through occipitoposterior presentation.

The legs are often bandy, and this is a common feature of achondroplasia (Figs.

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[11] These two dwarfs appear many times in the tomb-scenes at el Amarna in the tombs of Panehesy (Davies, N. de G. The Rock Tombs of el Amarna. London, 1905–8, II, pls. v, viii), of May (Ibid., v, pl. iii), and of Ay (Ibid., VI, pls. xvii, xxvi, xxviii).

15, 17). Figure 15 suggests rickets, but the square muscular build of the dwarf and the short arms make it appear more probable that achondroplasia is intended, and that the bowing of the legs is exaggerated, an inference which is confirmed by the word *nemiw* (achondroplastic dwarf) written over the figure.

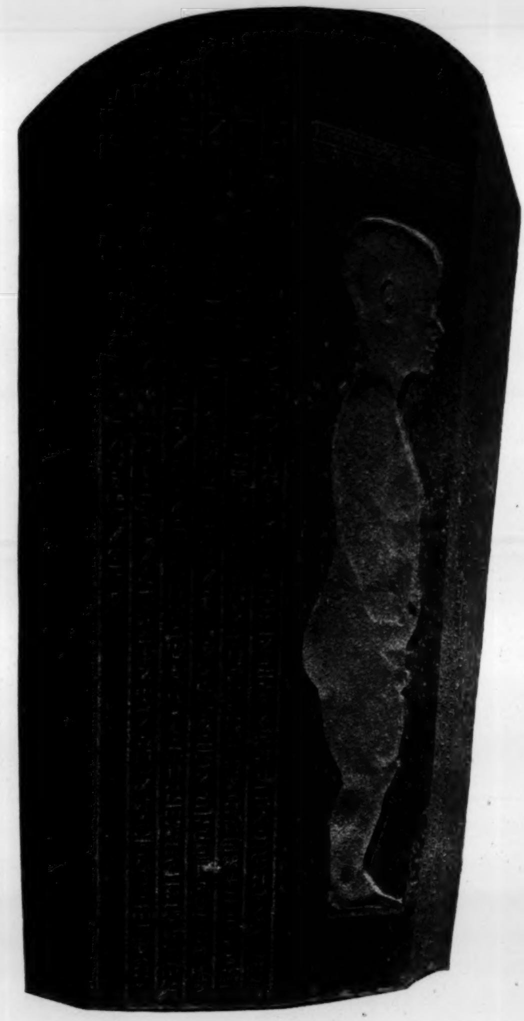

FIG. 53. LID OF THE GRANITE SARCOPHAGUS OF THE DWARF TEOS THE SON OF PETEKHONS, DISCOVERED AT SAKKARA BY QUIBELL IN 1910, NOW IN THE CAIRO MUSEUM. DYN. XXX.

Achondroplastic dwarfs had magical significance,[12] and for this reason figurines and amulets were formed in their shape from the earliest times (Figs. 19, 23, 36, 40, 43–47). In a magical papyrus at Leiden there is a spell to facilitate birth, which is called the "spell of the dwarf."[13] This consists of an incantation, at the end of which the rubric adds "Say the words four times over a dwarf of clay placed upon the forehead of the woman who is giving birth." In another magical papyrus there is a spell in which a dwarf is invoked: "O thou dwarf of heaven! O thou dwarf of heaven! Thou dwarf whose face is big, whose back is long and whose legs are short!"[14] In the "Book of the Dead" there is a spell concerned with a two-headed dwarf, and the picture of it in the Turin Papyrus is here reproduced (Fig. 8). One of the guardians of the gates of the Underworld was a demon based upon the figure of an achondroplastic dwarf (Fig. 6), and a similar figure occurs in a funerary papyrus of the Twenty-first Dynasty (Fig. 7). The last three examples, although mythological subjects, are clearly based upon human models, with the necessary exaggeration needed to produce a terrifying appearance, for they are all denizens of the Underworld.

In addition to the actual skeletons of dwarfs found in the tombs of the First Dynasty to which reference has already been made, some crude figures recovered from the same tombs are clearly intended to represent dwarfs. Making due allowance for the roughness of their execution, Figures 21 and 22 leave no doubt as to what the ancient artist had in mind. The same may be said of the predynastic dolls shown in Figures 43–47.

OTHER CASES OF DEFORMITY

Figures 14 and 16 are both from the tombs of Beni Hasan (Twelfth Dynasty) and represent somewhat undersized men with inturned feet. The proportions of body and limb are not otherwise abnormal. These are cases of double talipes varus, in which the foot is turned inwards and shortened, the inner edge of the foot is raised, and the patient walks upon the outer edge. The female dwarf in Figure 10 appears to be a case of double talipes equinovarus, in which the heel does not touch the ground. The left foot of the mummy of the Pharaoh Siptah (Nineteenth Dynasty) exhibited a typical case of talipes equinus (Fig. 31). The toes only touch the ground, the heel being in the same vertical plane as the legs. (Cf. Fig. 35, the foot of a modern Egyptian.) Another case of talipes has been recorded in a mummy of the Twelfth Dynasty from Rifeh.[15] The Egyptian name for a club-footed person is *zeneb*, as we learn from the inscriptions above the Beni Hasan figures.

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[12] Cf. the important part played by dwarfs in folklore of all countries.

[13] Leiden Papyrus I. 348, p. 12, lines 2–6.

[14] British Museum Papyrus 10,042, p. 8. lines 9–10.

A condition for which the Egyptian name is *iw* also occurs at Beni Hasan (Fig. 13). The hump in the upper part of the spine indicates Pott's disease. It is unfortunate that the original is so damaged that we cannot now see the condition of the anterior part of the body, nor the articulation of the arm. The spine of a hunchback, with coalesced vertebrae was found in a predynastic cemetery by Petrie.[16] He gives no particulars, and although it is possible that Pott's disease was manifested by this specimen, it is more probably a case of arthritis, which was a very common bone disease in predynastic Egypt. One of the large series of mummies of priests of the Twenty-first Dynasty examined by Professor Elliot Smith, that of Nespaherân, exhibited a typical case of Pott's disease, with extreme displacement of the spine, and a large psoas abscess into which the pus from the tuberculous lesion in the lumbar vertebrae had drained (Fig. 51). An account of this interesting specimen has been published.[17] In a tomb of the Nineteenth dynasty at Thebes, a well-marked case of Pott's disease is shown in the person of a gardener working a *shadûf*, or water-elevator (Fig. 37).

Figures 26–29 represent so-called "steatopygous dolls," the first from Negada, the others from Nubia. I believe it is a mistake to see in these figures any attempt to portray an actual state of affairs, and Professor Elliot Smith is no doubt correct when he says:

> Comparison of these grotesque caricatures of the female form which are common in the archaic period, not only of Egypt, but also of Europe and Western Asia, makes it abundantly clear that they were not intended to portray racial characters, nor were they representations of the condition of localised heterotrophy of fat known as steatopygy. They are simply models of the cowry shell, the most ancient symbol of the giving of life (i.e. the organ of birth), anthropomorphized as the Great Mother, by the addition of intentionally crude representations of the head and feet to the model of the shell, which provides the thighs and lower abdomen of the grotesque amulet.[18]

During the Middle Kingdom both in Egypt and Nubia, female figurines with large hips and thighs were made. They bear tatoo-marks on the thighs and pubic region. These are usually, but wrongly, referred to as steatopygous. (Figs. 38, 39, 44, 45, 47.)

Lordosis is well marked in some of the achondroplastic dwarfs described above, and to a more prominent degree in Figure 24, which is a vase fashioned in the form of a woman playing a lute, but it is most marked of all in the picture of the "Queen of Punt" from Deir el Bahari (Fig. 30). The pathological condition revealed by this remarkable woman has given rise to numerous speculations. She has been described as an achondroplastic dwarf—a self-evident absurdity, for there are present none of the characteristic features of acohndroplasia, and the woman's stature is equal to that of the adult men who precede and follow her. A second diagnosis, that of steatopygia, is equally erroneous. The chest, shoulders and arms are broad and muscular, there is little mammary development, but the thighs and legs are fleshy and flabby to an extreme degree. Were it not for the fact that all the other subjects represented in the large series of bas-reliefs to which this figure belongs are executed with great skill and marvellous fidelity to nature, we might have supposed that the artist had given free play to his imagination. There was formerly a second figure, the queen's daughter, which exhibited the same characters in a less marked degree. It is important to note in passing that the queen had been a mother, and this fact must be borne in mind in diagnosing the disease from which she suffered. Dr. J. B. Hurry has suggested to me that this figure appears to represent some rare disease in which there is severe lordosis and another disorder known as adiposis dolorosa, or Dercum's disease. In this disease there are extensive fatty deposits in various parts of the body. If this suggestion, which is only tentative, should prove to be correct, the queen of Punt provides the earliest case on record of the disease.

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[15] Murray, M. A. The Tomb of Two Brothers. Manchester, 1910, p. 42.

[16] Petrie, W. M. F. Naqada and Ballas. London, 1898, p. 24.

[17] Zur historischen Biologie der Krankheitserreger, 1910, No. 3.

[18] The Ancient Egyptians. London, 1923, Ed. 2, p. 38.

Figure vases, which are common in all periods of Egyptian history, are frequently based upon the shapes of dwarfs and other deformed persons, as the smallness of limb and the general contour readily lend themselves to the design (Figs. 24, 42, 50).

The illustrations here reproduced have been drawn, and in some cases traced, from the sources which are indicated in each case. Wherever it was safe to do so, I have restored the damaged outlines of the originals.

[Cowper: Anatonia Corporum Humanorum. Utrecht, 1750]

THE CULT OF ASKLEPIOS

A CRITICAL STUDY

By EDGAR M. BICK, M.D.

NEW YORK, N. Y.

IT has long been held almost as axiomatic that the study of Greek medicine before Hippocrates is a consideration of the healing methods as practiced in the Asklepieia. Except for slightest mention by the more comprehensive historians, the secular physicians of ancient Hellas have been ignored. The inexhaustible literature on the Cult of Asklepios, fascinating as it is, needs no addition, but it leads one to the realization of the tremendous gap which exists in our knowledge of the development of medical lore among the Greeks. Hippocratic medicine was the fusion of two elements; one the Cult, at the acme of its popularity during the fifth and fourth centuries B.C., the other, the medicine and surgery of the towns, villages and battlefields. It is, I believe, most pertinent to weigh the relative influence which these two sources exercised on the later art. However, considering the present paucity of material relating to the latter, a critical investigation of the Cult may lead to greater evaluation and renewed interest in the lay practitioners of early Greece.

The Asklepiads were the romantic element in Greek medicine. The great physical beauty of their shrines, the enduring glamor with which mystic rites are universally invested appealed strongly to the naturally aesthetic senses of the people. To later students the close bond existing between the towering figure of Hippocrates and the Aesculapian temple at Cos inspired intensive consideration of the Cult, and served to relegate to it many of the characters of the Master. Yet, in calling the individual the product of his heredity we cannot assume the corollary and give to his progenitors all the virtues of their greatest product. The roots of Hippocratic medicine do not necessarily lie in the temple at Cos, but must be sought in that same cultural soil which gave birth to his immediate predecessors and contemporaries in science, philosophy and the arts. I mention Hippocrates but to recall that he lived at a time when the eastern shores of the Mediterranean and the Italian peninsula were seething in a "more concentrated intellectual ferment" than the world has ever since experienced.[1] The impetus responsible for this intellectual outburst, whose meteors included Pythagoras, Plato, Pericles, Aristophanes, Sophocles and Phidias, was of far more universal character, and had a more profound influence on Hippocrates than the tardy and hesitant reforms which are supposed to have occurred within the Cult at this time.

We may then examine the Cult, not as the great source of inspiration for Hippocrates and his school, but rather on its own merits, and see what were its actual contributions to medical science.

The Cult of Asklepios is essentially a religious sect and unmitigably pagan. It is built upon the foundation of a mythological hero or deity, a legendary figure from among those earth spirits who were ancient even to Homeric audiences. At first a rather simple Thessalian story, it later acquired all the frills and furbelows of a full-grown Ionian myth. A structure of divine revelation is its fundamental concept, enhanced as is necessary by an elaborate devotional ritual. The brethren are priests, at first inheriting their position by primogeniture, later chosen by lot at annual sessions controlled by the state and its politics. These priests serve first of all their godhead, preserve jealously the prerogatives of caste, and exercise their privileges with all that impressive ostentation practiced universally by the priesthoods of mystic cults from Nippon to Peru. The worship of Asklepios in the vista of comparative theology is the Greek manifestation of Isis and Osiris, Gibil of Assyria, and the healing saints of Christianity who are his direct descendants.

The temples, varying somewhat in different localities, were on the whole rather characteristic. Each was built around an Hellenic sancto sanctorum, a central crypt or grove in which rested the immediate representation of the god in the form of a statue, snake or some other one of his terrestrial manifestations. At times, his sons or daughters occupied his place while he was attending at another shrine. Round about were placed the various courts, pavilions and shelters which formed the temple group. The temples were usually built on the site of a well, the curative power of whose waters had been recognized before the introduction of the Cult. In these places Asklepios frequently bore a double name, the second continuing the honor of the local deity whose good-will made the waters potent. Over all, however, hovered the sublime beauty of the countryside to which only the delicate pen of Walter Pater can do justice.

The routine of therapeusis was so strongly bound up with divine intervention that it is difficult to distinguish any of the ancient art of medicine in it. As many have pointed out, the invigorating atmosphere and stimulating environment in which the temples lay must have markedly affected the general constitutional well-being of the suppliant; but this, to priest and devotee alike, was but a means of assisting him to withstand the emotional intensity of his night or nights in the presence of Asklepios upon which he depended entirely for relief. Upon this personal contact with the god hung hope and faith. Whatever regimen preceded or followed this contact was to the religious Hellenic consciousness a mere ritualistic accessory. So that when we read in the books of the historians and geographers of ancient Hellas, programs of hygienic procedures imposed upon the sufferer during his preparatory period, they bear as little relation to Asklepiad faith-healing as the change of climate necessitated by a pilgrimage to Lourdes bears to the curative powers of Our Lady. That a fortnight amid the luxurious hills of Epidauros, with the mountain air, sunshine, and physical relaxation, would improve many of the ills of Attica, we cannot doubt, but we must not fail to realize that, in the thoughts of the patient, all was but an appendage to the miracle. For the hope of the miraculous brought men to Epidauros, and later brought the priests of Asklepios to Athens and Rome. The Asklepiads offered not treatment but cures, and the unfortunate sinner to whom the god granted not relief after a number of ordeals was ushered from the temple as an outcast from divine mercy. Hence, since the cure depended not upon the sagacity and experience of the healer, but on the righteousness and purity of the soul of the patient, the Aesculapian priest, as priests of all mystic cults, was infallible.

Of course there were cures, very many of them. Dr. Walton remarks:

> But proof of a cure is no proof of its method. A model of a man's hand may indicate a cure by miracle or by scientific treatment. As far as direct record goes, the cures were effected by miracle only, as was supposed by the credulous. . . . There may have been physicians in the Asklepieion, but their presence is neither necessary nor can it be proved. . . . Although [votive] offerings are recorded in a time of which we know much, among all the names of suppliants not one is that of a well-known citizen. Does this not suggest that the use of the oracle was confined to the more ignorant classes, at least as a place of healing?[2]

In some of the larger Asklepieia there were physicians in attendance according to evidence obtained from bas reliefs and steles found among the temple ruins. Whether they gathered about the temple to gain patients or were a recognized part of the temple group is not certain, but even if they were actual members of the Cult their part was of a very minor character when the method and manner of cures is considered. Most of these cures are of the type consistently found before miracle workers, the blind, the paralyzed, intestinal parasites alleged to be devouring the entrails of the host, the deformed. These came to the temple, were cured and departed soon after, leaving images of the healed organs, or tables descriptive of the cure. Mr. Farnel notes that "the discovery of the inscribed slabs from Epidauros containing a long list of temple cures, has given the coup de grace to any claim of the Greek priest to any science at all.[3] Votive offerings are common enough at all centers of faith healing. Witness even today the crutches and testimonials at the shrines of saints. Irrespective of the reality of the cures effected at these places, one would hardly consider the methods as contributions to medical therapeutics.

The popularity of Asklepios and the unswerving devotion of his followers which was so profound as to have been the last bulwark of paganism against which, in the Italian peninsula, Christianity had to compete, was due in part to the wisdom and sympathy of his priests and for the rest to his close association with so powerful a deity as Apollo. The Cult grew strong, and people flocked to Epidauros, Cos, Pergamos and Tricca. It was not until Athens suffered severely from a plague which ravaged the land in the fifth century B.C., and against which the local physicians and priests proved to be of no avail, that the people demanded not the medicaments of the Asklepieian priests but their actual presence, and the exercise of their religious rites in behalf of the city. Later, about 290 B.C., Rome, also in the throes of a pestilence which overran all attempts of the Latin physicians to thwart its devastations, sent an embassy to Epidauros, and a ship returned with the Sacred Serpent, Asklepios incarnate, who, as the story is told, landed and chose the site of its temple.

These, once more, are the manifestations of the miraculous. The effect which the Cult could exert on the plague in a populous city hardly depended on the curative value of the atmosphere or waters of its temples in the mountains. To the minds of the populace, the plague, dying out as the result of the development of a generalized immunity to its infectious agent, coincident with, or shortly following the arrival of the Aesculapian priests, called late in its fury, was a token of divine intervention. And to those priests, the kindly intercessors, accrued still greater prestige.

It was not until the first and second centuries A.D. that the Cult changed radically in its procedure. At this time, the dream or oracle itself was no longer the cure. The advice of the priest based on his interpretation of the phenomenon was then along the lines of treatment as commonly practiced. But this change occurred late, when the influence of all pagan religions had greatly waned. By this time, the Asklepeion was no longer a temple, but rather a fashionable sanatarium.

DEVELOPMENT OF LAY MEDICINE

Parallel with the development and expansion of the Cult, however, lay medicine was gathering experience and formulating its rules. Secular physicians and military surgeons abounded in Asia Minor, as distinctly not a part of the Asklepiads as the faculty of Salerno was not adjunct to the relic cures of a chapel in the Apennines. Crotona, the city in which Pythagoras lived and studied, was famous for its physicians. Here, before the days of the Hippocratic Oath, healers taught the art to disciples, and disciples went forth to attend the invalid. In that fascinating fountain of erudition which Pythagoras built on the slopes of the Italian peninsula, all branches of learning were included in philosophy, and there are suggestions of a theory of medicine in the curriculum.

How consequential this was, and whether actual clinical demonstrations kept pace with the discussions of theory we have still to learn. That the demonstration, so characteristic of Pythagorean methods, was not expected in the medical branches, as it was in all others, is hardly probable.

Many of the cities of Greece maintained state physicians. Athens boasted among its accomplishments the ability and wisdom of its public health officers, who, although working with individuals instead of masses, were seriously attempting to eradicate disease from the community by prescribing preventive measures in diet, drink and sexual excesses. Among these Athenians is mentioned Democles (*ca.* 525 B.C.) whose influence extended throughout Greece.

Alkmaeon (*ca.* 500), a pupil of Pythagoras and an immediate predecessor of Hippocrates, is referred to as "skilled in anatomy." Practically nothing is known of the extent of his anatomical investigations.

In the wars surgeons were winning admiration for their skill, and their ingenuity in these times of stress was told by historians and poets. Xenophon records eight army surgeons in the expedition of the 10,000 at the end of the fifth century B.C. In those days when battles were fought hand to hand, fractures, dislocations, deep and extensive lacerations, amputations, punctures and contusions furnished tremendous opportunities for traumatic surgical intervention. And the experiences of these military surgeons gave far more material to the Hippocratic Corpus than did the postoperative observations of Aesculapian priests on the comparatively few soldiers who came to Epidauros or any of the other three hundred odd temples of their Cult.

As far back as the Homeric era, Patroclus, a Greek army surgeon,

> . . . With his dagger from the thigh
> Cut out the biting shaft, and from the wound
> With tepid waters cleansed the clotted blood;
> Then pounded in his hands, a root applied
> Astringent, anodyne, which all his pain
> Allayed . . . [4]

Behind these men are to be traced their sources. They are not products of the Asklepiads, nor did they devote their efforts to the Cult. Hippocrates, after he had received what knowledge he could obtain from Cos, did not disdain to travel among these people and learn their art. It is most significant that Hippocrates, during the period in which the Asklepiads were most numerous and influential, he, one of their own children, is practicing and teaching methods in which the religious or mystical element is practically negligible. Did this mean a lack of faith in that deity he knew so well, or did it mean that Cos needed a well-trained physician on its staff and sent forth one of its younger men to seek the training?

Although there is recorded in the ancient literature no indication of antagonism or even rivalry between the secular and divine healers, there is nothing strange in its absence. Many examples of the coexistence of sacred and profane medicine, if the term may be used, appear in medical history. The medieval universities presented at the same time and within the same walls faculties of medicine and theology, and an incurable disease, from the medical standpoint, stood as a visitation of God (thereby coming into the realms of theologic pharmacology) until such time as a genius arose to relieve God of the aspersion. And so, it is easily comprehensible that the Asclepiads served as a supplement in attending to those sufferings of humanity which transcended in their obscurity the wisdom of secular medicine.

The phraseology of Strabo regarding Asklepiad cures is interesting. "[Epidauros] was a distinguished city, remarkable particularly on account of the fame of Aesculapius who was supposed to cure every kind of disease." We today are far more gullible about the cures of the Asklepiads than were the ancient Greeks. The sick Ionian went to a physician; when he secured no relief, he "tried out" the priests. Of course this does not express the attitude of the orthodox religionist, but by the fifth century B.C. the orthodox religionist, among the higher classes at least, was not a very frequent experience on the Mediterranean.

What then of the secular physicians? Where are their records? These are subjects for future investigations. So far we have merely been able to point out some of the paths which may disclose the answers. Part of the answer may have been wafted over the Nubian desert with the smoke from Alexandria; or perhaps physicians in those days, like John Hunter, were wary of writing down opinions, and passed their knowledge by word of mouth until Hippocrates saw fit to condense the ever expanding material into a "practical system."

It must be apparent that in the development of Greek medicine, the Cult of Asklepios played a passive or at most a rather insignificant part. It may even have been a retarding force interfering with the results good or bad, of methodical medicine. Let us then relegate the Cult to its proper sphere in the realms of comparative theology, and seek further to discover the origin and development of clinical science among the lay practitioners of pre-Hippocratic Greece. The origin will probably be found in Egypt, Chaldea, and Persia, but the freedom of medicine from the shackles of the priesthood is a contribution which could have been made only in Greece, and it is not to the Cult of Asklepios that we must look for its liberation.

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DR. RICHARD BRIGHT

AN OPHTHALMOLOGIST'S APPRECIATION*

By BURTON CHANCE, M.D.

PHILADELPHIA

IN the honorable roll of English physicians the name of Richard Bright stands among the greatest in the first half of the nineteenth century. His dsicovery of the importance of the association of albuminuria with dropsy being dependent upon disease of the kidneys was of almost equal rank with the discoveries of Laënnec in diseases of the chest. While it is true that dropsy and an altered appearance of the urine that was coagulable by heat had been observed since the Middle Ages, these symptoms were not traced to their source, nor were they connected in the minds of medical observers with a diseased condition of any organ; until Bright's discovery no one had suspected the kidney to be the organ implicated.

Medical practitioners are commemorating this year the centenary of Bright's discovery, for it was in March, 1827, that he published the first report of his observations. It is fitting, therefore, that ophthalmologists, too, should find in this centenary aspects which to themselves ought to be of the greatest interest. It may be that few know of the varied contributions Bright made to medical science, yet all constantly have before them the frequency of the association of disorders of vision with albuminuria. Before Bright's day, at the beginning of the nineteenth century, and earlier, observers had been aware of, and wrote concerning the occurrence of defect or loss of sight in conditions producing dropsy, such as scarlatina, pregnancy and during the puerperium.

Bright came under the stimulating influence of Sir Astley Cooper while still a student, and he imbibed from him the importance of morbid anatomy in the study of disease. He began to make drawings of diseased kidneys so early as 1810, and, from 1813, he collected data for investigation into that malady through which he afterwards became famous. It was not till 1827, however, that he published his "Reports of Medical Cases, selected with a view of illustrating the symptoms and cure of diseases by a reference to Morbid Anatomy" in which are the accounts of the researches on dropsy with which discovery his name is inseparably connected.

Bright, by his investigations of the state of the body of the dropsical, ascertained that in all such a peculiar condition of the kidneys was present, and he proved that the symptoms manifested during life were really those excited by disease of the kidneys. He states, "I have never yet examined the body of a patient dying with dropsy attended with coagulable urine, in whom some obvious derangement was not discovered in the kidneys." The truth and importance of his research were soon recognized; moreover, it proved that Bright was not only an acute observer but that he possessed the much rarer faculty of synthesis which makes an observer a discoverer. His genius took him further than mere observation, however brilliant that might have been, for he was one who could correlate his observations. In a short time in the whole of Europe "morbus Brightii," or "Bright's Disease," became an accepted disease and will doubtless preserve the memory of Bright as long as the disease is known by a separate name.

In the succeeding years, with patient persistence, Bright and his fellow-workers analyzed their cases and tabulated a hundred-odd histories. Assuredly one of the most wonderful series of papers in medical literature is that in "Guy's Hospital Reports," for the year 1837, in which are recounted "Cases and Observations Illustrative of Renal Disease Accompanied with the Secretion of Albuminous Urine"; and, a "Tabulated View of the Morbid Appearances Occurring in Cases in Connection with Albuminous Urine." The details are extraordinarily complete and they testify to the care with which the examinations were made. "In almost all," he writes, "I have been present at the examination after death." He considers no trouble too great to obtain a post-mortem examination, to do which he would willingly go into the country, despite the slow travelling of those days, in order to be present. He details cases of albuminuria in which marked defect of sight had occurred. In a group in whom there were uremic manifestations, loss of sight was observed in four; in certain of the cases the onset of amaurosis was one of the earliest as well as the most striking of the clinical features. These accounts led others in the next few years to publish their observations concerning the occurrence of defects of vision in patients with albuminuria.

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* Read at the Section on Ophthalmology, College of Physicians, Phila. Thursday, April 21, 1927.

Bright was born in Bristol, England, in 1789. He entered on his medical studies when twenty years of age, at first in Edinburgh and then in London. After a year's interruption, during which he visited Iceland, he returned to Edinburgh, where he received his degree in 1813, his thesis being on "Erysipelas."

He early manifested a love of travel. Besides the voyage to Iceland, in 1814 he made a tour of Holland, Belgium and parts of Germany attending hospital practice wherever he found it. He spent this winter in Vienna. The Viennese School of Medicine was in high repute, because of the eminent men there. It is of special interest to us that Bright attended the course in Ophthalmology given by Beers; and already in London Moorfields had been opened as the direct result of definite teaching by the Vienna School, which had been inaugurated by Barth. The following spring found Bright in Hungary. He returned to Brussels just after the Battle of Waterloo, where he found the immense hospital crowded with the sufferers from that great battle, all of which supplied matter of professional interest and delayed his homeward journey.

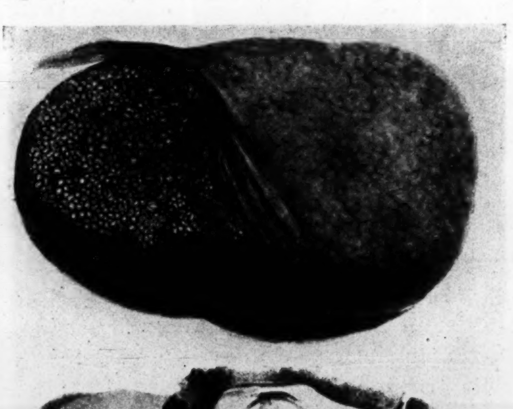
On his return to London he became attached to the Fever Hospital, but his service there was brief because he contracted a fever in which he nearly lost his life. On recovering he set out for a continental tour through Germany, Italy and France.

By 1820 Bright was in practice and soon began to give courses in clinical study and to lecture. By his extraordinary industry he made his reputation; and he contributed not a little to the rise of the great school at Guy's, to which hospital he was attached, becoming full physician in 1824, a position he held until 1843, when he resigned to confine himself to consultation.

He constantly displayed great energy, and his industry in his hospital work was remarkable. He was intensely devoted to Guy's, and until he resigned he was constantly devising ways for continuing his studies. For years he passed six hours a day in the wards and post-mortem room; besides all this he conducted his systematic lectures. From May to October 1842, the whole of both the male and female clinical wards were set aside for the admission of cases of renal disease only, and they were under the care of Bright. "This," as he says, "is the first experiment which, as far as I know, has yet been made in England to turn the ample resources of a hospital to the investigation of a particular disease, by bringing the patients laboring under it into one ward properly arranged for observation."

He had little power of exposition, and was less popular and important as a teacher than his brilliant colleague, Thomas Addison, with whom, for many years he was associated and with whom he started a "Textbook on the Elements of the Practice of Medicine," which however did not extend to a second volume.

The range of the subjects of Bright's contributions to medicine is most extensive and touches on almost every department. His industry was indefatigable by which he amassed hundreds and thousands of facts, and his minute accuracy of observation was seldom if ever at fault. It has been said that he did not perceive the true value of his own observations, which is quite credible, but his genius guided him to the right result.



KIDNEY IN DROPSY.
TOP. EXTERNAL VIEW OF ONE OF THE KIDNEYS OF KING. BOTTOM. A LONGITUDINAL SECTION OF THE SAME KIDNEY.

These numerous researches display the same powers as his masterwork and have been thought to have even greater originality. He paid most attention to diseases of the nervous system, and he was a pioneer in the subject of cerebral localization. He noted hemiopia in cerebral hemorrhage, and records the case of a man who during life had a deranged sense of touch on the right side together with disorder of vision. The only cerebral anomaly found was an old hemorrhage in the "posterior part of the right Thalamus nervi optici (corpus geniculatum inferius)," and Bright concludes, "that the symptoms which arise in cerebral and spinal disease are actually the results of the lesions which the different parts of the nervous system have suffered." His true greatness was perhaps overshadowed by the magnitude of the importance of his discovery of the kidney disease which has been singled out as though it were his only contribution to science. It is the importance of the subject of that work and the powerful influence it has had, and continues to have, in the progress of medicine in all countries, that gives to this disease its classical position.

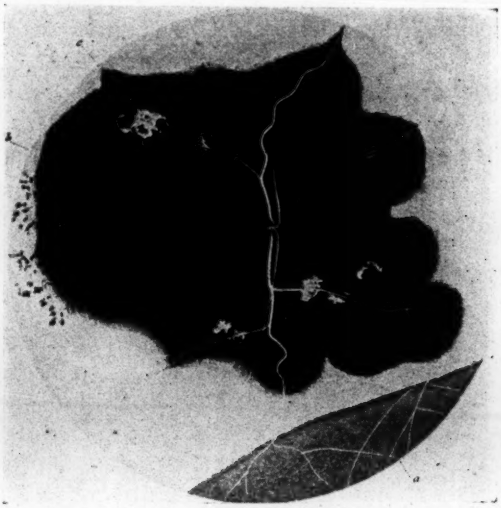
Bright's works taken together form one of the most important contributions to morbid anatomy ever made in England by one person. Most all were illustrated with admirable plates, many by his own hand. As far as Bright is concerned they were original, for he is careful to give credit to workers who have preceded him. He was ungrudging in his admiration for the work of others. He inspired the younger men to aid him in his researches but he was always most careful to acknowledge the assistance given.

In the meantime perfection of microscopes and devising of histological methods were progressing, and were taken advantage of by those interested in ophthalmological pathology. In 1850, Türck examined microscopically the retina removed postmortem from a case of albuminuria in which one of the clinical symptoms had been a loss of sight, and he gave the earliest description of the histological changes in albuminuric retinitis. His discovery was soon confirmed by other investigators and a few years later the opinion was put forth by Virchow that the so-called uremic amaurosis was attributable to gross disease of the retina. Heyman in 1856 did much to establish the importance of retinal disease in albuminuria, and studies in the pathological anatomy of the retina were carried on by Zenker and Virchow.

The ophthalmoscope was not invented before 1850. To Liebreich belongs the credit of the first detailed description and representations of the ophthalmoscopic appearances of albuminuric retinitis, which he published in 1859; from these appearances it has been possible to diagnose with certainty the existence of renal disease. The colored plate illustrating Liebreich's paper is one of the earliest employed to depict the ocular fundus; to the ophthalmologist it is as historic as Bright's plates explaining the diseased kidneys. These ophthalmological facts do but contribute to the honor of Bright's discovery. As Bright died in December, 1858, there were thus confirmed, within the year of his death, by the ophthalmoscopic pictures of lesions of the tissues of the eye, comparable to those which he, years before, had seen only post mortem in the kidney; and, by the aid of the ophthalmologist, the practitioner was enabled to venture a prognosis as to the duration of life from the visual and retinal changes demonstrable in the living eye.

It would be natural for us to seek to compare the observations and the pathological findings in nephritis made by Bright with our present day knowledge. It might be well to insert here the plate of the case of John King, to show all the essential symptoms of chronic disease and the first recorded case in which they were successfully correlated with the conditions found after death. The accuracy of his descriptions of symptoms has not been exceeded by anyone. If we except retinitis and measure of the blood pressure, although he knew that sometimes the pulse was hard, every ordinary clinical symptom is mentioned; death from uremia, cerebral hemorrhage, and acute inflammation of serous membranes, all are recorded. And, most certainly, the keenness of Bright's study of the gross anatomy has not been surpassed. The disease stands out with all its features clear, and the account is as true today as it was then. In his day it was not possible to examine, as we now can, the minute structures of the kidney; nevertheless Bright had much knowledge concerning the glomeruli. Perhaps his classifications of nephritis are not as satisfactory as the modern, and yet, can we be more certain than he was? But his uncertainties as to cause and prognosis have not been removed by later investigation and practice.

The ophthalmoscopic study must be considered as a later addition to the description of nephritis and its consequences. Surely, Bright must have been aware of the possibilities of the ophthalmoscope. Although I have not searched all his records, I have not yet come across any reference as to the use of it. Liebreich's first descriptions and illustrations of albuminuric retinitis cannot be accepted as typical of the common form of the disease, at least as we ordinarily find it. Nevertheless, their publication, thirty-two years after Bright's first report, must be accepted as epochal in the history of disease; and the part taken by ophthalmologists since the time they first comprehended the importance of their contribution might well be considered to be that of continuators of Bright.



THE FIRST REPRESENTATION OF THE OPHTHALMOSCOPIC APPEARANCE OF ALBUMINURIC RETINITIS.

In considering Bright's observation of the morbid anatomy of the kidney, we are reminded of the part Bowman took in the study of the physiological anatomy of that organ. Sir William, even to the end of his days, was affectionately spoken of as "the Father of the Kidney." Doubtless the physiologists lamented that Bowman left them to pursue ophthalmology; but we know that while Bowman led in that practice, yet he never abandoned his interest in any branch of science he once had studied. He knew Bright and often must have been in consultation with him. We can all imagine the joy which overcame Bowman when he found it possible to view the interior of the eye, and there to see, vividly, lesions associated with the affections of the organ he had for so long examined but only after removal from the dead body.

Bright was probably consulted in a larger number of difficult cases than any of his contemporaries. At first, however, his practice was not large, but as reputation grew he took the leading position in London. Many honors came to him, with Fellowship in the great institutions both British and foreign.

He was widely accomplished; a linguist, and well versed in more than one science. In an account of the voyage to Iceland he contributed chapters on the botany and zoölogy of that Island, and, the next year, he published accounts of geological formations in the regions of his native town. His journeys through Hungary were recorded in a volume published soon after his return. His sketches for the Hungarian volume show that he was a creditable artist, possessing much taste in art; and was cultured on all sides by travel and society.

From early manhood he was animated by a genuine love of truth and an unswerving sense of duty. He possessed a fine nature; of an affectionate and uniformly cheerful disposition, his intellectual characteristics evinced a certain simplicity with which he viewed objects without prejudice; not putting forth any theories nor was he biased by any of the prevailing systems of medicine. He contributed more perhaps than any other to form the medical opinion of his day; and, by his death all felt that the medical profession of England had lost one of the most original, observing and philosophic minds. Bright's power of seeing was extraordinary, little escaped him, but he never saw what was not there; not a single one of his observations has been shown to be incorrect. His accuracy and truthfulness are wonderful; no preconceived idea ever hurt his description. His natural bent and training gave him the ability to write well, and it is a pleasure to read his work. He manifested remarkable tact in picking out the important facts on any subject and was able to combine them so as to explain each other.

For many years Bright suffered from disease of the heart; his last illness was very brief. He was unwilling that his body be examined after death; from the accounts of his health, however, it may be conjectured that he was himself a victim of the disease he had for so long studied in others.

In the *Medical Times and Gazette*, for December 18, 1858, in a brief notice are the words: "Richard Bright rests from his labors . . . He now takes his place among our 'Great Ones of the Past.'"

Truly, he was an extraordinary man and he might certainly be counted among the first five or six of the foremost of our profession.

KIDNEY DISEASE AS DESCRIBED BY RICHARD BRIGHT IN THE LIGHT OF THE KNOWLEDGE OF A CENTURY LATER*

By HENRY A. CHRISTIAN, M.D.

BOSTON

LET us turn back the hands of time a hundred years to March 24, 1827, and picture how Richard Bright was occupied on this day. At this time he was serving in the capacity of physician to Guy's Hospital, where he visited the wards, examined and prescribed for patients, and in case of a fatal outcome, performed autopsies. Probably his activities at the hospital were very similar to those of a physician to one of our modern hospitals, except in so far as autopsies are concerned, for the making of post-mortem examinations is a privilege rarely, if at all, granted to visiting physicians of today. Besides being physician he was lecturer on the practice of medicine, and so doubtless occupied during part of his time in teaching. In addition, he was a practitioner of medicine, seeing patients both in his consulting room and at their homes. Exactly how he spent this day a hundred years ago, I can only surmise. Apparently for some reason Bright did not go to Guy's Hospital on March 24, 1827; on March 26 he prescribed a nightly pill of aloes with myrrh for Eliza Plume, a maid of eighteen, in the clinical ward of Guy's suffering from nephritis with anasarca, noting that her right arm had nearly returned to its natural size (58)[1]; on March 27 he made notes and prescribed for a young man (E. S.) of twenty, suffering from a confirmed and somewhat advanced fever (219); for several days thereafter daily notes appear in the published record of these patients. During March Bright was much interested in a patient with nephritis. This patient's condition made it evident that he was going to die, as he did. In this record there appear these words: "As I could not be present at the examination, I requested most particularly that the kidneys, the heart, and a part of the liver might be preserved for me, which was done, so that I was enabled to have excellent drawings made of them all; and I am obliged to Dr. Hodgkins for the following particular account of the appearance" (59). This autopsy was made on March 25, 1827.

On March 15 he recorded observations on the above Eliza Plume. During the ten days between his visits to Eliza Plume of March 15 and 26, of course, he may have been at Guy's; the only reason for doubting this lies in the fact that he had made frequent notes on Eliza Plume prior and subsequent to these dates, actually on March 5, 7, 12, 14, 15, 26, 27, 28 and 29. Furthermore, it seems highly probable that had it been possible, a man with Bright's intense interest in these nephritic patients would not have absented himself from the autopsy of March 25 had it been in any wise possible for him to be at the hospital at this time.

Perhaps during these days he may have been ill himself, or perchance he had left London to see a patient. Whatever he may have been doing on March 24, 1827, we know that during this general period he was intensely occupied in making observations on patients with nephritis, and during the latter part of March he must have been busy collecting and preparing his data for publication, because he states (28): "While the proof of this page was before me for correction (April 4th) the following case occurred." This was Case XII who "died upon the 2nd of April."

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* Read before the Section on Medical History of the College of Physicians of Philadelphia at the Bright Centenary on March 24, 1927.

[1] Numbers in parentheses refer to pages in Bright's original publication: Reports of Medical Cases Selected with a View of Illustrating the Symptoms and Cure of Disease by a Reference to Morbid Anatomy. Vol. 1, by Richard Bright, printed by Richard Taylor, Red Lion Court, Fleet Street, and published by Longman, Rees, Orme, Brown and Green, London, 1827.

Correction of proof and other work in connection with the publication of his observations on kidney disease had not been completed the latter part of May, 1827, for on page 86 he says, "The following letter . . . came to me just as the present sheet was in press." The letter, referred to, was from Thomas Hodgkin and was dated May 24, 1827. Editorial work probably continued well into the summer, for the preface to his report is dated 14 Bloomsbury Square, August 10, 1827. However, the volume of 222 pages has only the first 88 pages devoted to a consideration of diseased kidney in dropsy, so it is likely that shortly after May this portion of his work had been completed.

Bright's publication of 1827 was entitled "Reports of Medical Cases Selected with a View of Illustrating the Symptoms and Cure of Diseases by a Reference to Morbid Anatomy," and the part which particularly interests me at present has the sub-heading, "Cases illustrative of some of the Appearances observable in the Examination of Diseases terminating in Dropsical Effusion and first of the Kidney." Here are reported 24 cases, 18 fatal, with descriptions of post-mortem findings. The study of these patients with Bright's deductions therefrom, as published in this volume, forms the basis of forever linking the name of Bright with nephritis in the sense of having proved the relationship between dropsy, albuminuria and renal lesion, a relationship but vaguely surmised prior to this work of Richard Bright.

Bright has left us objective descriptions of his patients and of their kidneys which, a hundred years after their publication, we can reexamine and, on the basis of our present day knowledge, interpret. Let us do this.

As to urine, coagulation on heating in a spoon held over a candle flame was his chief criterion of kidney disease. Today, with test-tube and flame, we obtain the same information and it remains our chiefest criterion of kidney disease in the sense of Bright, of nephritis in our present language. To it our only refinement is a slight acidification before boiling and Bright's friend, J. Bostock, in his chemical study of these urines, as reported to Bright and published in this volume, recognized the differences made by acidity and alkalinity in the coagulation by heat of these abnormal urines. The test tube and acid have undoubtedly made possible the detection of smaller traces of albumin, but it is questionable whether this has not served to bring confusion rather than clarity into our conception of nephritis, even though it has increased our refinement in the diagnosis of diseases in which kidney function is disturbed.

Since Bright's thesis in 1827 was that a diseased kidney might be a cause of dropsy, very naturally he confined his attention to patients who showed manifestations of dropsy, and of these gathered together those in whom, with dropsy, he found evidence, on examination of the urine, of disturbed function of the kidneys, thereby distinguishing them from those in whom he recognized liver disease, heart disease, obstructed circulation and peritoneal disease as causes of dropsy. The result is that his group of cases include almost solely those that today we recognize as having edema of renal origin. It is interesting, however, that he does include two patients of the other group, in which the edema in all probability was of cardiac rather than renal origin, an error that is still made with no great infrequency.

Reading over his case reports of patients a hundred years after they were observed by Bright, diagnosis easily can be made and one can predict that the kidneys of these patients would, for the most part, be in the group of the large white kidney, with a small number showing the small white or secondarily contracted kidney, or the kidney of acute nephritis with evidence of hemorrhage, and such were found by Bright as shown by his descriptions and his plates.

If today we were discussing these patients, we would have much to say of glomerular lesions and the majority of pathologists and, to a somewhat lesser degree, clinicians in grouping these kidneys would stress this by calling them some type of glomerular nephritis: acute, subacute or chronic. From autopsies on my own fatal cases of nephritis of the type described by Bright, I have selected several, in which drawings (Figs. 1, 2, 3) of the gross appearance of the kidneys show close resemblance to some of the kidneys shown in the plates of Bright (Figs. 4, 5). (Compare Fig. 1 with Fig. 4, which is a reproduction of Bright's Plate II, noting the resemblance between the kidney in Fig. 1 and that shown in Figs. a and b of Bright's Plate; compare Fig. 2 with Fig. 5, which is a reproduction of Bright's Plate III, noting the resemblance between the kidney shown in Fig. 2 and that in Fig. c of Bright's plate; compare Fig. 3 with Fig. 5, which is a reproduction of Bright's Plate III, noting the resemblance between the kidney shown in Fig. III and this shown in Fig. a of Bright's Plate.) In the colored plates of Bright and the original drawings in color of these kidneys from my own patients the resemblance is even more striking.

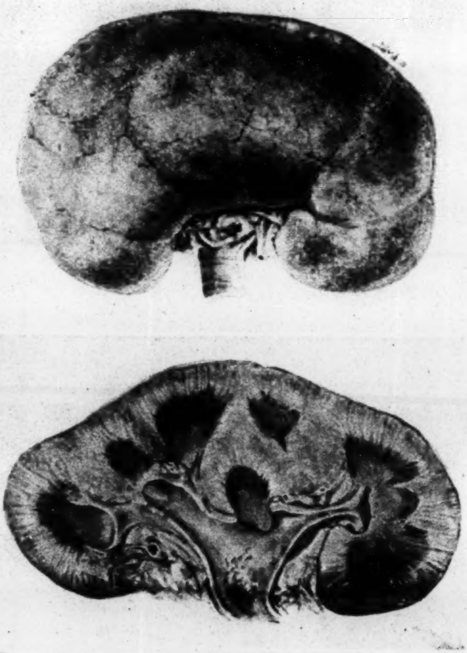

Fig. 1. Gross Appearances of Kidney of Patient with Nephritis Studied at the Peter Bent Brigham Hospital in 1921.

Histologic study of the kidneys from my own cases (Figs. 6, 7, 8) reveal glomerular lesions as a predominatingly important lesion.

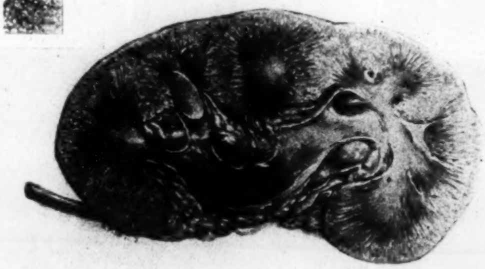

Fig. 2. Gross Appearances of Kidney of Patient with Nephritis Studied at the Peter Bent Brigham Hospital in 1921.

It is reasonable to suppose that the kidneys depicted by Bright being so similar in gross appearance would have shown similar changes under the microscope, as did my own specimens.

It is probable that Bright actually saw, described and attempted to depict the enlarged glomeruli in some of these kidneys; today one would feel very sure that under the microscope in these there would be found proliferative types of lesions of the glomeruli leading to their large size and pale color, as depicted by Bright. How much Bright actually knew of the finer structure of the kidney does not appear from his report. His friend, J. Bostock, made thin sections of the liver and examined them under the microscope, when studying material sent him by Bright from autopsies, in which Bright thought the liver diseased, but there is no mention of any microscopical examination of kidney tissue. This seems all the more curious, inasmuch as Bright actually sent him bits of liver from an autopsy on one of his patients regarded as having dropsy of renal origin, apparently with the idea that additional proof of the renal origin of the dropsy would be gained if the liver was proved by microscopic examination to be normal or only slightly damaged in structure.

It is interesting that, within a period of eighteen months, Bright was able to observe sixteen fatal cases of nephritis of the edematous type, when one recalls that today this form of nephritis is really quite infrequent in our clinics, for the great majority of patients with acute nephritis recover, while the subacute and chronic forms of glomerular nephritis or nephritis with edema make up but a small percentage of what at the present time we call nephritis. Possibly in Bright's day this form of renal lesion was actually more prevalent than today. However, it is to be recalled that Bright was striving most assiduously to find material to prove or disprove his ideas, and in the group which he studied were several supplied from the hospital service or practice of his colleagues.

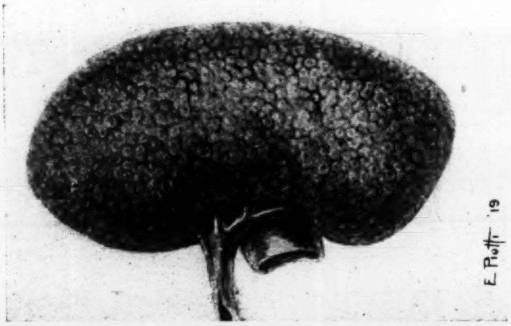

Fig. 3. Gross Appearances of Kidney of Patient with Nephritis Studied at the Peter Bent Brigham Hospital in 1918.

Turning to some details of Bright's patients, their age and sex groups would correspond fairly well with that of the same number of cases observed today. Not including the two which probably had a chronic interstitial type of nephritis, and two whose age was not stated, his youngest fatal case was fourteen and the oldest fifty; 4 were in the fourteen to twenty-five year period; 2 in the twenty-six to thirty-five; 4 in the thirty-six to forty-five, and 2 in the forty-six to fifty. The absence of patients over fifty, except the one of fifty-five, which had a small red granular type of kidney (chronic interstitial nephritis), is entirely in accord with what we would find in our present day clinics. The six non-fatal cases, included by Bright in his study, ranged between eighteen and fifty-eight years. As to sex of fatal cases, 12 were males, 6 females, and of non-fatal cases, 4 were males and 2 females.

Duration of the edema in the fatal cases in which the information is definite enough to allow of an estimate varies from three weeks in 2 patients which showed the kidneys of acute nephritis, to eight years in 2 patients, one of whom showed chronic glomerular nephritis with secondarily contracted kidney and the other chronic interstitial nephritis. Eight had a duration of between two and one-fourth and six and three-fourth months, and these showed kidneys anatomically to be diagnosed as subacute or chronic glomerular nephritis.

In the history of these patients Bright notes pain or discomfort in the loins in 6 cases, and speaks of the condition developing after exposure to cold or wet weather in 9 cases, and following a cold in 2 cases. Ten of his patients had marked alcoholic histories, which Bright is inclined to regard as playing a causative part.

In some of the patients with longer duration Bright notes the appearance of edema with subsequent disappearance; in 1 patient this happened three times. In 1 non-fatal case, though edema had disappeared and the urine no longer coagulated, he expresses skepticism as to the future, saying (47): "I do not, however, feel at all sanguine that he will be free from relapse" for "possibly, the white granular deposit had already in some degree taken place." In another in which symptoms still persisted when his report was sent to press, he says (49): "She is greatly improved: but as long as the urine remains in so morbid a condition, we cannot but feel the probability of relapse." How well do these statements coincide with our own uncertainty as to prognosis in patients with recurring or persisting edema of renal origin?

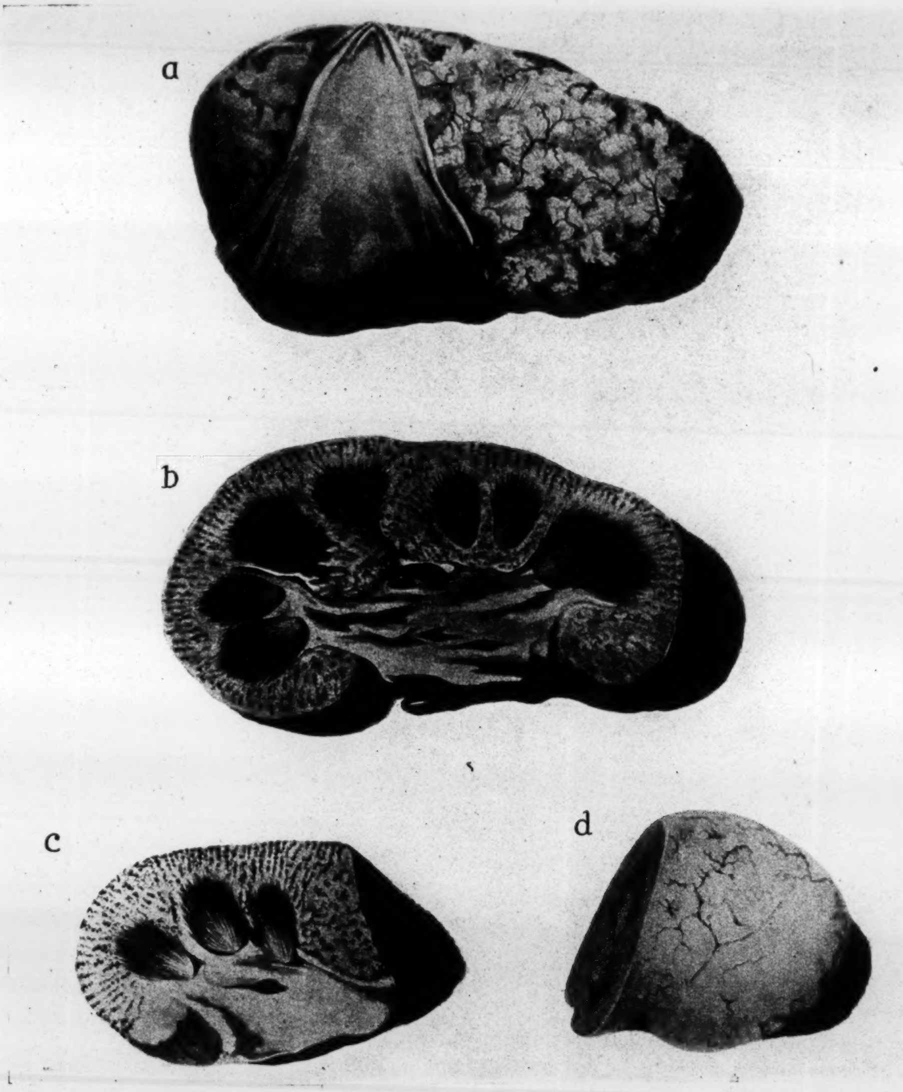

FIG 4. PHOTOGRAPHIC REPRODUCTION OF BRIGHT'S PLATE II OF 1827.

Bright was entirely familiar with the proneness of these renal patients to develop inflammatory disturbance toward the end of life and comments on this several times. "The tendency to inflammatory affections in this man," fibrinous pericarditis, peritonitis and gray hepatization of the lung, "was a striking feature in his case and appears to me connected immediately with the condition of the kidneys; for when secretion of these organs is greatly deranged, the serous membranes seem always ready to become the seat of inflammatory action" (10). Apropos of another, Bright writes (18): "The peritoneal inflammation and more acute pleuritic attack which appeared to hasten his dissolution, afford but fresh proofs of the disposition which exists in this disease to severe inflammatory affection of different structures, but more particularly of the serous membranes." Of still a third he writes (66): "We have in this case likewise another instance of the proneness of the serous membranes under such circumstances to run into a state of inflammation." Three of his patients showed fibrinous pericarditis, 1 with fibrinous peritonitis, 1 with fibrinous pleurisy; 1 showed fibrinous pleurisy, 1 acute edema of the glottis, probably of inflammatory nature, and one erysipelas of the leg. Severe diarrhea he also described in his patients and in some this had much to do with the fatal outcome.

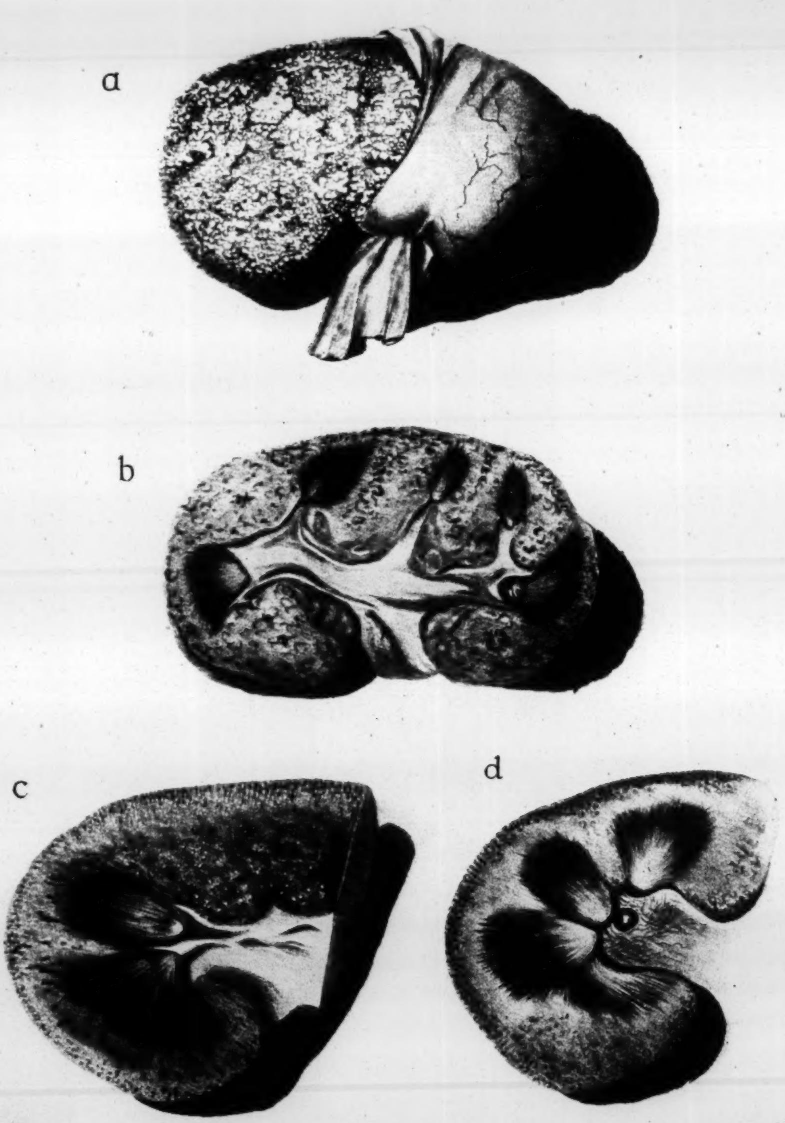

Fig. 5. Photographic Reproduction of Bright's Plate III of 1827.

We now know that the fatal outcome in this type of nephritis seems dependent upon infection rather than renal insufficiency, for except in those with secondarily contracted kidneys, renal function, except for the excretion of water and salt, remains remarkably efficient and uremia is rare.

The terminal infections of nephritis, especially fibrinous pericarditis, may produce practically no symptoms; often we detect them only as a result of daily routine physical examination. Bright, too, was aware of this and comments as follows (66):

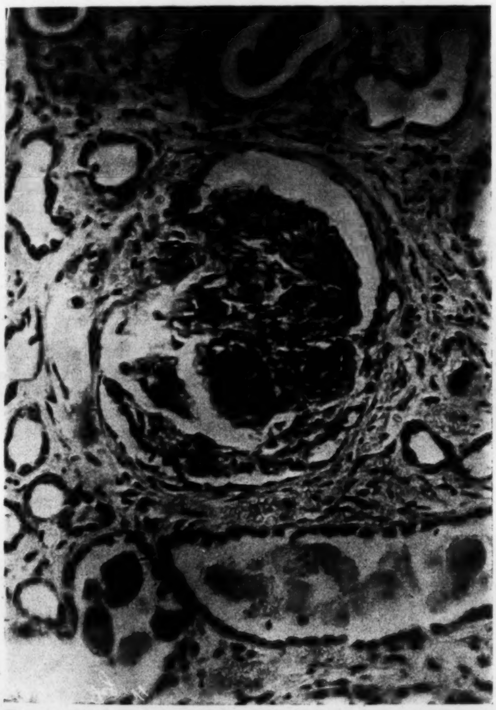

FIG. 6. GLOMERULAR LESION OF KIDNEY SHOWN IN FIG. 1.

"We have in this case . . . fresh warning of the difficulty with which inflammation of the pericardium is discovered; for except for the appearance of the inflammed surface, I am totally at a loss to say at what period the pericardium in this case became inflamed." This patient denied pain; Bright questioned him carefully in this respect, "for being well aware of the risk of inflammation I was never unmindful of it." It does not appear that Bright ever used a stethoscope to detect pericardial friction rubs and in his reports there is no mention of heart murmurs. He did, however, listen to the lungs with a stethoscope.

As would be anticipated from present knowledge of the circulatory apparatus in nephritis with oedema very little evidence of heart or vessel lesions, except acute pericarditis, was encountered by Bright in the majority of his patients. In half the heart appeared entirely normal in size. In Case I the heart is described as large, and there was between the aortic valves a solid deposit of bone of the size of a pea. His nephritis, however, was of too short a duration, nine weeks, to account for the cardiac enlargement. In Case VII, as the history of slight attacks of dropsy goes back over a period of eight years, and the kidneys were much contracted, cardiac enlargement would be expected but permission to examine the thorax had not been granted. In Case VIII the heart was "remarkably enlarged"; this patient for two or three years had had occasional pain in his back and loins, and for a year had had great shortness of breath;

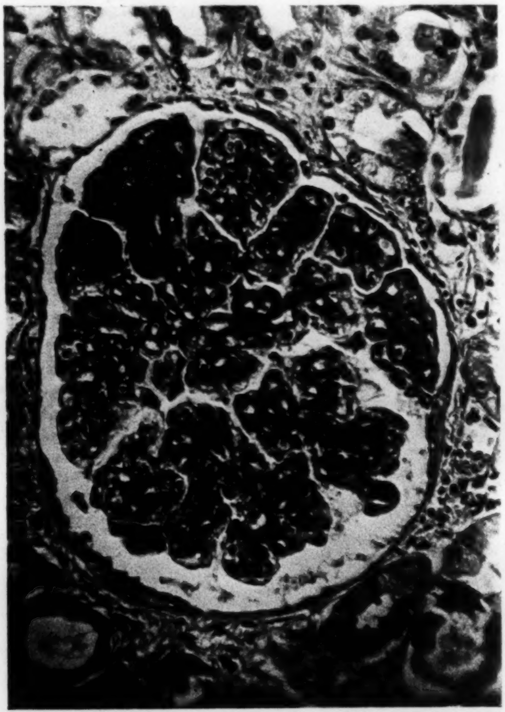

FIG. 7. GLOMERULAR LESION OF KIDNEY SHOWN IN FIG. 2.

marked anasarca existed for two months; his kidneys were very small and hard, their prevailing color was purple and their cortical portion was exceedingly thin, apparently chronic interstitial nephritis. Of this case Bright remarks (28): "The enlarged state of the heart would seem to bespeak some cause of obstruction to the circulation through the system beyond what we discovered, nor will I venture to say what share this might have had in giving rise to the dropsy." It seems to me that here Bright was dealing with our very familiar type of chronic nephritis with hypertension in whom the anasarca was mainly of circulatory origin and the marked albuminuria the result of chronic passive congestion in a kidney whose tubular parts had in large measure atrophied. In Case x the right ventricle was hypertrophied and the kidneys much like those in Case viii; this patient had had cough and dyspnea for eight years and had been admitted to other hospitals three times with anasarca. In Cases xi, xv, and xxiv the heart was rather large and in Cases xii and xxiii the left ventricle is described as having a decidedly thick wall. There is nothing in Bright's descriptions to indicate any more than very slight arteriosclerosis in any of the cases. One patient died of cerebral hemorrhage, but his nephritis seemed very recent and the processes were probably merely coincidences. Another patient died suddenly of pulmonary embolism or thrombosis. It seems justifiable to say that in the type of nephritis studied by Bright the circulatory apparatus was not disturbed as a result of the nephritis except in the few instances in which the kidney had undergone sclerotic atrophy; two of these were cases of chronic interstitial nephritis with oedema largely of circulatory rather than renal origin.

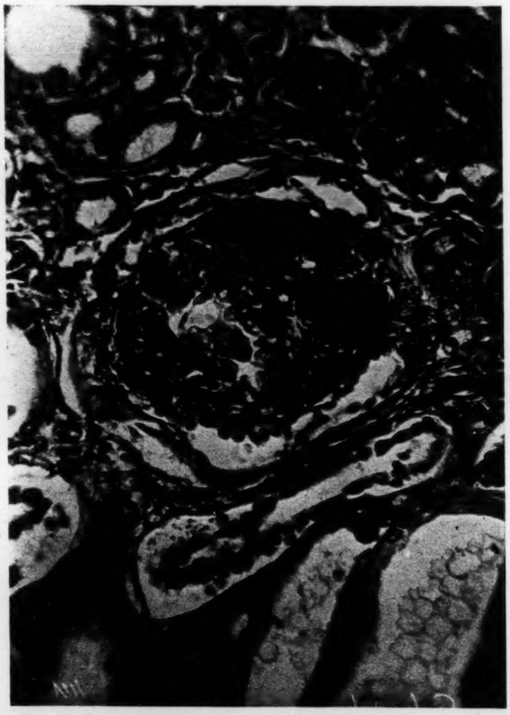

FIG. 8. GLOMERULAR LESION OF KIDNEY SHOWN IN FIG. 3.

With regard to classification of his pathological findings, Bright writes (p. 87):

> From the observations which I have made, I have been led to believe that there may be several forms of disease to which the kidney becomes liable in the progress of dropsical affection. . . . In the *first*, a state of degeneracy seems to exist, which from its appearance might be regarded as marking little more than simple debility of the organ. . . . The size of the kidney is not materially altered, nor is there any obvious morbid deposit to be discovered. . . . The *second* form of the diseased kidney is one in which the whole cortical part is converted into a granular texture, and where there appears to be a copious morbid interstitial deposit of an opake white substance. . . . The kidney is generally rather larger than natural; sometimes it is increased very much, but at other times it is little above the natural dimensions. . . . The *third* form of the disease is where the kidney is quite rough and scabrous to the touch externally, ... the feel is hard. . . . The tubular portions are observed to be drawn near to the surface of the kidney; it appears in short like a contraction of every part of the organ. . . .

But Bright is by no means sure of "the existence of these three different forms of the disease. . . . On the contrary it may be that the first form . . . never goes much beyond the first stage; and that all the other cases . . . are to be considered only as modifications, and more or less advanced states of one and the same disease" (69).

A hundred years after Bright we still are not sure as to whether nephritis is a single disease with different stages or several entirely independent conditions. Of the cases studied by Bright, we would be inclined to say that he dealt for the most part with different stages of a single pathological process, forms of glomerular nephritis, acute, subacute and chronic, the latter both with and without interstitial tissue proliferation, but that he most assuredly included examples of at least an entirely different form of nephritis, chronic interstitial or vascular nephritis, and possibly some of his acute cases represent a still different form of disease.

Of his three groups, the first and second seem now scarcely divisible, but to include cases which are acute, subacute and chronic glomerular nephritis, cases without any connective tissue increase. His third group evidently would include both the secondarily contracted kidney, an end-stage of glomerular nephritis, and chronic interstitial or vascular nephritis, both small granular kidneys, the one white, the other red, in both a very considerable connective tissue proliferation being found.

As today practically every student of nephritis presents a different form of classification, we are in no position to criticize adversely Bright's views as to grouping and interpreting renal lesions of the nephritic group. Like Bright, we are still far from knowing the etiology in any way to base a classification on causes. The same holds true of pathogenesis. Like Bright, we are still struggling to attain a satisfactory clinico-anatomical classification; perhaps Bright was as near the truth in 1827 as we are in 1927.

As to treatment, Bright very wisely remarks (20):

> It will be very obvious from a review of the cases that I have cited, that they sometimes present difficulties so formidable as to defy the ordinary means of cure; indeed, I am inclined to doubt whether it be possible, after the decided organic change has taken a firm hold on the kidney, to effect a cure, or even to give such relief as may enable the patient to pursue for a few years the occupation of life; where, however, the mischief is less rooted, we may undoubtedly do much.

This is not very different from our present day view.

Bright recognized as the two great sources of danger, inflammatory affections, particularly of the serous membranes, and "effusion of blood or serum into the brain and the consequent occurrence of apoplexy" (71). Both of these dangers he anticipated by active depletion, chiefly bleeding and similarly treated them when they developed. Bleeding and cupping over the loins he regards as effective influences on the congestion of the kidneys. Depletion is further accomplished by purgatives, elaterium, jalap, supertartrate of potash and castor oil. Squill combined with opium is a favorite prescription. Mercury he uses in almost every patient; hydrargyri oxydi cinerei, hydrargyrum cum creta, hydrargyrium submuriat, appear often among the medicaments of his prescriptions, and when he gives these usually his doses are large enough to cause ptyalism and mercurial stomatitis. Digitalis is given at times. Liquor ammoniae acetatis is used.

But of mercury Bright has doubts:

> Still, however, the cases which have proved most successful in my own practice have generally been those in which I have rigidly abstained from mercury (73). In some cases I have seen the good effects of other remedies entirely interrupted by the mercurial action. . . . I had purposely abstained from the employment of mercury; and its accidental exhibition . . . (51). (By a mistake of the nurse he had been taking a grain of calomel and half a grain of opium, night and morning, for the last three days; and I now find him completely salivated, although I had stated my resolution of giving him no mercury (49).

> . . . was undoubtedly attended by injurious consequences at the time (51). . . .

One gets the idea that Bright did not quite dare to follow his convictions in the presence of so general a reliance on mercury as a most efficient medicine; of another patient he says (54): "Whether we are to ascribe the improvement which took place, both in the quantity and the quality of the urine, to the mercurial action induced, or to the continued exhibition of saline diuretics, it is no easy matter to decide."

As of mercury Bright, too, appears to feel some uncertainty as to using diuretics:

> Moderate bleeding and a low diet, with the administration of saline diuretics, increased the daily flow of urine from a pint and a quarter to four pints and a half, before the plan had been five days adopted. . . . At the end of about ten days more, obvious symptoms of renal irritation showed themselves; which might indeed have arisen from the continuance of the diuretic treatment (47).

Of another case who died of acute nephritis, Bright remarks (36):

> I feel that it may be matter of doubt how far the employment of diuretics during such diseased tendency may have been instrumental in producing the peculiar appearance of the kidneys; but it is to be remembered that the particular symptom, the haematuria, which appears so immediately connected with this morbid state, has been observed to occur in a greater or less degree under all modes of treatment, and even before any treatment has been adopted in sudden anasarca, and therefore we cannot in fairness ascribe the morbid appearance of the kidney to the remedies, or at all events we must admit a certain high degree of disease to have existed in that organ from the commencement of the symptoms; but whether to the extent discovered in this case after death or not, we can never determine.

By 1836 (Cases and Observations Illustrative of Renal Disease Accompanied with the Secretion of Albuminous Urine, Guy's Hospital Reports 1836.) Bright had greatly extended his observations of renal disease and come to more definite conclusions in regard to mercury and diuretics. He opposed the use of mercury, and of diuretics he says: "With regard to diuretics I have generally wished to abstain from all except digitalis. . . . I look upon this class of remedies, however, in the light of a necessary evil in some cases; and do not feel authorized in recommending their employment."

Now one hundred years after Bright's publication of 1827 we can but wonder at his clinical acumen. Of his conclusion as to the relationship of the kidney lesion to dropsy, today we hold as he did. We know of the finer histology things not possible of observation by Bright, and so recognize the important part played by glomerular lesions in the kidneys described and depicted by Bright. Bright's uncertainties as to cause, classification and prognosis remain uncertainties to us. Symptomatology of this particular group Bright understood about as well as we do.

As to treatment Bright in 1827 evidently was breaking away from the influences of his time in treatment, which included bloodletting, mercury to ptyalism, etc., toward a non-meddlesome therapeusis not dissimilar from that guiding our treatment of nephritis one hundred years later. By 1836 he appears to have arrived at about our present ideas of the treatment of nephritis with oedema of renal origin, including an avoidance of diuretics. Of the effect of digitalis as a diuretic he was not sure, an uncertainty that still prevails among some who continue to confuse, as apparently did Bright, edema of cardiac origin with renal oedema.

AROUND GENERATION IN THE TIMAEUS

By JONATHAN WRIGHT, M.D.

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ON turning to a former issue of ANNALS OF MEDICAL HISTORY I find that I began an essay on the "Timaeus" of Plato with a reference to Aristotle.[1] In the present article, which will find its mainspring also in the "Timaeus," but which deals largely with the subject of some of the modern ideas on the birth of man, we shall again have to take up some of the ideas of Aristotle, as well as those of Plato, on the birth of matter. It is this which leads us into the "Timaeus" again. I presume without the criticism of Aristotle on the "Timaeus," especially of all his master's books, subsequent commentators would less frequently, certainly less intelligently, have made a study of it. For many of the formative years of his life Aristotle was a pupil of Plato, for seventeen years of his youth, it is said. This familiarity with Plato's doctrine, thus derived and thus extending far beyond an acquaintance only with what we have of Plato, in addition to the ability derived from his own transcendent genius, made Aristotle able to elucidate many dark points in the "Timaeus." His familiarity, too, with the personality of Plato must have given the pupil the courage subsequently not only to criticize, but also to use the mind Plato trained as a superb weapon with which to refute some of the details of the latter's philosophy. So much has he criticized, so much has he refuted, that the average reader of the "De Anima" and "The Metaphysics" of Aristotle somewhat naturally comes to the opinion that the Aristotelian teaching is diametrically opposed to that of Plato. But when the careful student turns from these works to those of Plato himself, his diligence will enable him to appreciate how much the pupil derived from his master. Aristotle repeatedly calls himself a Platonist. A modern commentator[2] on Aristotle has recorded references to a number of passages in his works where the younger man pays a tribute of respect to Plato and acknowledges himself as his follower.

In reading Galen the medical historian perceives how much more he was inspired by Plato than by Aristotle. He places Plato and not Aristotle side by side with Hippocrates in his treatise on their dogmas.[3] Robin[4] points out that Plato gave birth scarcely less to Aristotle than to Plotinus. In the former paper I referred to the very dark corner in the "Timaeus" which deals with generation and which Plato calls the Receptacle. This Robin regards[5] as "the nurse of generation." It is the place where not only the birth of the world takes place, but also the birth of the soul of man. It not only shapes and gives form to all things, but, being the mould of them, it is also shaped by them; the child becomes the father of the man. There is nothing which takes shape that does not impart shape to the mould from which it springs. A man may write an essay on education but he is educated by writing it. Practice makes the doer perfect in what he practices. It is well to remember this when we arrive at modern Lamarckism. It is the doing that does it.

It was Plato and Aristotle who blazed the trail to the Infinite through the wilderness of the ancient materialistic theories of the

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[1] Wright, J. A medical essay on the Timaeus. ANNALS OF MEDICAL HISTORY, N. Y., 1925, VII, 117.

[2] Ross, W. D. Aristotle's Metaphysics. Oxford, 1924, II, 406.

[3] De Placitis Hippocratis et Platonis. Claudii Galeni Opera Omnia. Ed. by Kühn. v, 181.

[4] Robin, L. La Pensée Grecque et les Origines de l'Esprit Scientifique. Paris, 1923.

[5] Robin, L. Études sur la Signification et la Place de la Physique dans la Philosophie de Platon. Paris, 1919.

Nature Philosophers who preceded them, for Plato's Receptacle has no more of the mystical about it than Aristotle's Unmoved Mover, who is the Origin of all motion. The modern materialist need not lose interest in them because he does not understand them. No one does. The modern materialist does not understand the mystery at the end of the trail modern science has blazed to the Infinite, but he also has arrived and he does not attempt to resent the lure to examine the meaning of the mystery there.

However fascinating these Platonic and Aristotelian cross word puzzles may be to the metaphysical "fan" it is natural for the medical historian to seek something more material than the mysticisms and the spiritual affinities of the Receptacle and the Unmoved Mover. All the training of modern science bids him to avoid such immaterialities, yet he will find not only the ideas of the elements and the forms of elementary matter, but the ideas of generation and heredity inextricably mixed up with what he, because of his bad training, cannot but regard as esoteric imaginings. He will find there is a proportion and a harmony, an arithmetical, a geometrical symmetry, of the combination of the elements of matter worked out in these "imaginings" which foreshadow the chemical formulae and the stereoscopic arrangements of molecular structure in the science of this, a vastly more materialistic, epoch than that of the Nature philosophers in the history of thought. This I will not attempt here to develop.

The body of man "was created in harmony and therefore having the spirit of friendship."[6] This is but an echo of Empedocles, though he is not mentioned in connection with it. It is the Love and the Hate of Empedocles, which are the moving forces in the shaping of the forms of all living things, and on these depend the proportional affinities of the elements. The existence of this proportion between the elements in the composition of matter in the body seems to have been the thought of Aristotle too in his discourse on the soul.[7] Plato interpreted much of physiological phenomena in the same way as Empedocles, but he strove to adapt this interpretation also to the geometrical figures and arithmetical equations of Pythagoras, but what we have to take notice of here is that the soul of man is not all divine. It is compounded in the Receptacle of the divine elements and of the elements of matter also.

Nearly every genetecist who knows anything of the historical background of his science will recognize that our concepts of the agents of generation trace their ancestry to the homoiomeres of Anaxagoras through the pangenesis of Darwin and the panspermia of Aristotle. As I understand it, in Aristotle's exposition[8] they are the first or most rudimentary combinations of the elements struggling into existence in the shape of their ultimate form. They belong primarily to the generation of matter, it would seem. Although the panspermia of Aristotle belonged to the same order of thought, he ridiculed the idea that metal is made up of small bits of metal, bone of small spicules of bone, flesh of particles of meat too small to be seen, for what then are these small things made of? It appears no less absurd to us, more absurd when armed with high-power microscopes, but we are looking at the chromomeres and asking the same question. What are these bearers of heredity made of?

It is clear from the discourse in the "Coming to be and the Passing away,"[9] as Joachim remarks, that Aristotle distinguished quite clearly between the different forms in the alteration of matter, but the distinction between the living and the non-living did not impress primitive men and ancient men as it does us. Spontaneous generation did not mean for Aristotle, as a modern man of science once soberly told me, that a worm was created out of nothing, it was simply an alteration of matter. We know that alteration occurs. In the change from matter to force and back again the modern man sometimes comes perilously near to conceiving of matter as made from nothing. We are quite familiar now with the thought of the transformation of matter, but for the most part we revolt from the thought of the creation of matter or kinesis out of nothing. In parthenogenesis we are familiar with the virgin birth and we know, as Aristotle knew, that at some time the animate was created out of the inanimate in the sea, as was Venus and her earlier representative in Hindu mythology. That all life comes from the sea the ancients thought as much as we; why not from dead bodies and the compost heap? The observer may be mistaken as to where and when this occurs, but men will always believe, notwithstanding the disgust and horror of all biologists, that it did occur once or more, more rather than once had a beginning on this earth. The birth of lead, one of the heaviest and most material[10] of elements, from radium, one of the most fugacious of elements, is scarcely less strange. We all believe in the principle of spontaneous generation as Aristotle believed in it. We quarrel only about the specific application of it.

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[6] Timaios, 32.

[7] De Anima, 406a. Ed. by Hicks. Cambridge, 1907. See the commentary, p. 269.

[8] Coming to be and passing away. Ed. by Joachim. Oxford, 1922, 314a–16.

[9] 318a, 13–21. See commentary, p. 120.

There is another way of looking at it, and this entered into the thought of Aristotle and Galen too, which perhaps I may have the opportunity to relate. I stretch out my hand and look at it. It is not a dead hand, not yet. There is a lot of living matter in it. I know it. I have seen the cell creep through vessel walls and secret and devious channels to other vessel lumina. I have seen it apparently stiffen into forms, not so obviously alive, and give birth or divide into others which wander off. It was alive though perhaps an ancient taking a peep at it at one stage might have thought it dead. There is a lot of living matter in the hand. It all came from the outside, if we drop the germ plasm for a moment, for its contribution was inconsiderable. I had salad for supper and beef for breakfast. When did it begin to live again? I had salt on it, when did it begin to live at all? That my hand or a beef steer or a salad leaf drawing mineral from the soil, that the ancestry of matter living or dead as I see it here can be traced back to chaos (one can possibly believe that) but back to nothing? no one can conceive it! We must reform our definitions. Huxley's term, biogenesis, is not much better.

Our definitions take for granted that living matter is differentiated from dead matter and yet they fail to define what is meant by the living or the dead. Plato and Aristotle worry about this not at all. It is a secondary interest to them. Matter and the life in it are all evanescent. It is the changes of form of matter that are interesting and that from life to death is only one of the phenomena of "Coming to be and Passing away." It is only the divine that endures when matter passes away. When matter is alive it is the soul which animates it. That was "life" for them. That has the capacity of movement in the absence of matter. So we see the ancients too were in contact with the puzzle of motion and nothing to move. We see there is movement in the cell as it creeps among connective tissue spaces. We see it in the ameba. That is life, that is soul or the manifestation of it. We can call the latter the attribute of matter too. That, as we shall see, is the germ plasm. The only thing really alive in my hand is the germ plasm then. As to the size of it, if that is anything important, it is infinitesimal. Plato's soul, however, is part matter and partly the divine; the latter we can define as Nothing or the All, just as we choose. The important thing to remember is that some materialistic conception clings to Plato's soul and some to the modern germ plasm. The latter is force and matter, too, and we are desperately studying the latter in the karyokinetic figures of the germ cells.

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[10] I see now they are changing lead into thallium and into mercury, and mercury into gold,—or so believing.

They come and disappear, lose their identity apparently, become as nothing.

No matter can be so small, no power so minute can be conceived of, as existing without attributes. It is the only means by which we apprehend either in our minds. These attributes are law, lay down the law for matter and force at any rate. I have attempted to give this a modern draping in biology, but this is the thought developed by Plato and Aristotle. Every philosophy has adopted it or has accepted it since. We shall see it leads straight into absurdities. What possible historical affinity has it with the course of the materialistic science which has done so much for us and for which we have done so much during the past hundred years or so? What have we to do with it now? Materialistic science itself has brought the question around in its vortices. The absurdities are with us again and I have labored to show that those of the modern philosophy, founded on the science of Nature, are the same as those of the ancient philosophy founded on the science of the Nature Philosophers. It illustrates the contention of many, who have interested themselves since the time of the Neo-Platonists with the history of thought, that despite any onward progress it may have, it moves in cycles, just as political forms do. It moves not only from homogeneity to heterogeneity in the terms of Spencer, but from heterogeneity around again to homogeneity. This is the course the thought of modern science has pursued since the Renaissance: from chaos to law, to attributes, to many syntheses, to duality, to one synthesis, monism. In science, which is always the basis from which philosophy springs, we are now hovering on the borderline between duality and monism, and so it was with Plato and Aristotle. Matter is merging into force and vice versa. It leads us to the absurd. I pick up a journal and I find an author[11] insisting that matter and force may both disappear and leave nothing but attributes, that the smile of the Cheshire cat may persist after the cat has vanished.

Now it is true there can be nothing so ridiculous as that cat and its smile, but in referring to the very suggestive paper of Herr Mie, what I wish to show is that modern science often furnishes notions as absurd as any in Plato, who makes us believe, just for the small fraction of time while we are reading the "Timaeus" or the "Republic," that his Ideas are realities and the only realities. Moreover to carry the analogy further, despite any absurdities we stand quite ready to believe white is black; that, like the Oriental, "two mutually contradictory hypotheses may both be true"; that what our senses tell us is a straight line is in reality a crooked line, if Einstein must have it that way; that things may go on in a vacuum, in nothing, just as well as in a room filled with ether arranged for all contingencies. I am sure I do not know why modern science scoffs at the Ideas of Plato or the Unmoved Mover of Aristotle. Now Aristotle thought the Ideas of Plato as absurd as we do on analysis, but Herr Mie and modern science are driving us into corners where we find them still, even as Aristotle[12] did. Is it possible we are thus getting a glimpse of chaos again, the beginning of another cycle of thought? I am going no further, even to show that Herr Mie's attributes are not exactly the attributes of the ancient philosophers perhaps, but I must turn back to the modern germ plasm at the point where I was contemplating it in my hand, as the only thing really alive there, like Plato's soul, however infinitesimal.

When Anaximander and his followers said that all things are made of a single deathless indestructible stuff, they may have been using mere verbiage in expressing the truth, as we are more inclined to view it today than we were a few decades back. If we have been once inclined to think the universe boundless, as they did, we sometimes now do not think it so. That it is all environing, as they said, seems somewhat meaningless, but it may have its significance for us. Monism is of course unthinkable, but that is no reason why it may not represent a reality beyond the limits of human thought. The germ plasm, an essentially mystic conception, as has been intimated, lies as the basis of living phenomena ever in our thoughts, and its manifestations are all around us in the environment. It is something which appeals to thought as the description of a process, not a material thing, but that does not help us if it is a mystical process. It must have relations with the "environing" or it would not be noticed at all. Its mystic principle must be bound up with the elements, like Plato's soul. It must be subject to the laws of its environment other than the mystical. It must be something practical, but that is what modern geneticists, in contrast to Plato, are often forgetting. Plato could not make a soul to suit him without mixing the divine and the material, each influencing and affecting the other. The divine must find some attributes in matter or it could not be grasped, and that would be fatal for even Plato's exposition. It is not forsaking a prudent station of agnosticism to admit the germ plasm may be partly divine. For all I know to the contrary it may be, but the Unmoved Mover of Aristotle and the unimpressionable germ plasm of modern biology do not appeal to me as practical. The germ plasm is useless for generation unless it influences and is influenced by both force and matter.

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[11] Mie, G. Das Problem der Materie. *Scientia*, Bologna, 1925, I, iii.

[12] De Anima. 322a, 20–25.

I prefer, philosophically, ultra-Lamarckism in its modern form, as developed by Houssay, to the ultra-Weismannian form Mendelism too often takes. It leads inevitably into the blind alleys of philosophy beyond human ken. Modern physics is headed in the same direction. When matter and force merge into one and then disappear and leave nothing but a cat's smile it is time for men of science to call a halt or resolve themselves into metaphysicians. As Burtt says,[13] the only way now for a scientific man to avoid being a metaphysician is to say nothing. It is to escape such pitfalls that the modern medical man of science avoids entangling alliances with philosophers. Owing to this the question of spontaneous generation has become taboo, and for the same reason, if we care to be consistent, the germ plasm too should only be mentioned in church. The ostrich hides his head in the sand no less gracefully than the modern man of biological science. Things are coming to that pass with him, as in physics, and he will have occasionally to withdraw his head far enough to take a cautious peek around.

He will have to be cautious or he will fall into the bad ways of Galen. One does not think of him as the heir of Plato. He is, of course, the adoring progeny of Hippocrates and his reverence for the latter often interferes with his mental processes. Since he heirs his philosophy, too, it is natural to think Galen must be similarly indebted to Aristotle. While he sometimes divides his reverence for Hippocrates and transfers a part of it to Plato, he is more frequently in dispute with Aristotle than consciously borrowing from him. Unconsciously, of course, Galen is heir to the thought of the five hundred years which reach back to Aristotle, and to no one does the world's thought owe more than to Aristotle, unless it is to his master. Galen had no misgivings as to philosophers, though he was not much of a one himself and we find him mixed up everywhere with Aristotle's teleology and in some places with Plato's tripartite soul. It is he who compels us as historians to take cognizance of such things also or to let the course of medical thought and biological theory remain forever dark to us, for it is Galen that guided them at what in truth was one of the most important epochs in their history. Interweaving such *a priori* conceptions into the theory and practice of medicine, Galen led it into many devious and dark ways to its detriment, but the light he threw on others more than compensated for the confusion the ancient philosophy, which had its sway over him, wrought in medicine.

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[13] The Metaphysical Foundation of Physics. N. Y., 1925.

If men of science on the whole have done well to shut their eyes to these paths and pass them by, the men of the history of science can do no such thing. They must lay bare the links that bind the physician as well as the physicist to metaphysics. They must not mistake pragmatic philosophy for real philosophy. They must show how the latter was once the dominant influence which guided men in medicine. Psychology then was the Logos about the soul, not the Logos about the details of the manifestations of the soul. The historian must show how it is still the ever-present mystical thing hovering in the air over modern science busy with these details. As I have urged, without this exposition the history of science is incomprehensible at its beginning and is blind to the ends toward which science tends, realization of the existence of the supernatural, the Infinite. Again the agnostic is free to say he does not know whether that is to be realized or not. The tendency toward it is unmistakable and there are not a few, like Lodge, who believe in its realization. As in physics, as in modern psychology, so in generation there is no escape from the mystical, for the historian at least. The "Passing away" leads to it, all men know, but the "Coming to be" in ancient science shows most insistently itself as the connecting link between mysticism and reality, between theology and physiology, between philosophy and medicine.

In the modern doctrine of the evolution of the senses the apprehension of objects in the environment has been a growth due to the survival importance of acquainting the living with certain motions of matter, living or dead, but we can readily understand there may well have been other motions. Those motions which tell in no way either for the preservation or the destruction of life can have had no influence on the evolution of sense organs. No motion indifferent to these can be known to us, no attribute of matter, because the apparatus to seize it has not been evolved. From this consideration our intelligence leads us at least to surmise there must be a vast realm of reality beyond sense, but I cannot see that simply because sense is limited as well as fallible that life is "but a dream." When Longfellow wrote the "Psalm of Life" he no doubt had been reading Calderon's "La Vida es Sueña." I am not sure but some of the New England prophets in the time of Longfellow took life and themselves a little too earnestly. I think life is a little more of a joke than they did. Life may not be so earnest perhaps as they thought, but there is no reason why life may not be real, even allowing that Protagoras was right in claiming that each man measures his own world for himself. The matter and motion taught to us by the senses may in some part be realities for all that.

Compared with our twentieth century evening of Lamarckism and Darwinian evolutionary doctrine, that of Empedocles seems almost as remote in thought as in time. It is very primitive and crude, so much so that it can hardly be looked upon as the germ of evolutionary doctrine twenty-five centuries later. In his novel, "Elective Affinities," Goethe seems to have had something from Empedocles, but if anything it was suffused with the rising chemical thought of the eighteenth century. The "like attracts like" of Empedocles had another echo in Germany in the *similia similibus curantur* of Hahnemann. Out of it all, too, we get the manifestation of the ways of thought of Plato and Aristotle, who followed Empedocles, persisting in the immediate predecessors of Lamarck. The environment adds to heredity. However feeble this thread of the continuity of thought may seem, as we go back to its origin it is interesting to see the first grapplings of the men of our civilization with the problems of the divisions of matter and the segregations and affinities of living things, especially their transmutations and mutations, the heredity of matter and men. In an entirely different field and in an entirely different way they had to meet a problem which is the problem of the ages and which Aristotle says Pythagoras labored with long before him.[14] Which was first, the egg or the hen? Aristotle did not regard it as a joke, at least he did not state it in such terms.

In the exposition of his hair-splitting doctrine of force, to his mind energy was actuality, only that part of force actually presented to the senses or actually acting. Behind it arose the mystical question of its source, we may call it the etiology. The Demiurge of Plato employed the energy of the First Great Cause, in whom, as the Unmoved Mover, Aristotle placed capacity. There is capacity and energy or actuality; which was first? Aristotle says it was energy. There is knowledge and the known[15]; which was first? There is heredity and there is the thing heired; which was first? If you have motion you must have something moved and so of the rest. There is Capacity in the germ plasm. That is an abstract mystical term from which we cannot escape. It is a Mover, which is not moved. When you draw the geneticist's attention to this as a brother materialist he waves you aside, as does the psychologist in modern days, and they tell you they have nothing to do with metaphysics. They are continually having something to do with it. It lies at the root of psychology and generation both. The best of these navigators, who sail such uncharted seas, have at least sighted the rocks ahead and are clawing away from them with hopes that chemistry or biophysics or physics will be found to have the desired explanations reserved for them; but physics is in difficulties of its own. Why bother about the germ plasm at all? Why not create man at once? There would be no greater miracle in that than in creating the germ plasm. Aristotle sees it. He says[16] it was a man that was born first, not the germ plasm. He was a fundamentalist, and that is being somewhat better than an evasionist when you come to the show down.

I have used my notes on the "De Anima" and "The Metaphysics" to lead up from various directions to this point, where Aristotle plants generation in the problem of man. In the treatise on "The Parts of Animals" he takes up[17] specifically this aspect of it and, unlike modern biologists, he does not blink its difficulties or ignore its affinities. He and Plato both created their mysticisms, as we call them, and accepted them as facts as near to the truth as they could get. Aristotle had our narrowness in view when he declared[18] that causation is simply a matter depending on one's enlightenment. At least that is the way Robin[19] paraphrases it: it is a matter of the point of view one takes of things in general. For the modern specialist, that does not count. Against his narrowness voices innumerable are being raised, even in the ranks of orthodox science. But after all their catholicity did not save Aristotle and Plato from much error, and as one follows them in their misty course, if one is a modern agnostic, it would seem better to him that they should have said "Ignoramus." In fact that is what Plato does make Socrates say (and a very pretty tale he makes of it) in one of the early dialogues, but he forgets it in the later.

As in philosophy, so in biology, Robin points out, Aristotle owes much of his opinions to his predecessors. Most men do, and doubtless he deserves the credit in a very large degree, as the world has given it to him, of being a pioneer in comparative biology. It is by this door he naturally enters into the biology of man, but as a matter of fact we have followed him in his way of thinking from other fields into those of genetic thought, from "The Metaphysics" and the "De Anima" to his discourse

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[14] Metaphysics, 1072b, 31.

[15] Metaphysics, 1049b, 15.

[16] Metaphysics, 1072a, 17.

[17] The Parts of Animals, 641b, 30.

[18] Metaphysics, 1013a, 7–19.

[19] Robin, L. La Pensée Grecque, etc. Paris, 1923, p. 342.

"On the Parts of Animals." We must realize that both for Aristotle and for Plato it is the soul in which lie latent, or are manifest, the physical and mental traits and the temperamental characters of man, the characters of his heredity. Under this conception it is necessary to think of the soul as diffused throughout the organism, because for Aristotle all the different characters of his panspermia are drained from the system to the marrow of the bones and especially to the spinal marrow (spinal cord) as the sperm of the male. When it passes into the female she furnishes only a local habitation and nutrition, but it is there we must suppose any changes in the germ plasm which the female is responsible for must arise, from the nutrition she supplies, but I do not find express authority for this. Whatever they may be, the mental and spiritual traits at least come through the male. When we reach the time of Goethe, the great protagonist of the pre-Lamarckian epoch of modern evolutionary doctrine, we find the revolt against this tenet of Aristotle, probably long since established, but evidenced in Goethe's declaration that in physique he was the son of his father, in spirit and temperament he was the son of his mother, a child of the Rhineland. Now Plato and Aristotle must have often had examples of this under their own observation. Apparently the pride of man in them blinded their perceptions.

Darwin's pangenesis was modelled much after the panspermia of Aristotle, but for Darwin, it is unnecessary to say, the characters of heredity did not descend by way of the spinal cord to the seminal sacs of the male, nor were they segregated in the male alone. Apparently Aristotle[20] had other features of his theory from Leukippus and Democritus, and probably also from Empedocles and Anaxagoras, but one again wonders if the route traversed by his germ plasm did not have its origin in an error of anatomical observation. It was so firmly fixed, in the face of absurd consequences, to the argument in the form in which Aristotle presents it to us, that one cannot help thinking that, like some of our own divagations, it was "founded on the firm basis of fact." I see that Henneguy, the great cytologist, quotes[21] with approval what he calls the sententious irony of Houssay: "Les faits passent, les théories restent." No one has done more than Houssay to offer an unshaken front of Lamarckism all his life long to the furious assaults of the Weismannian majority.[22] The latter might have found a very ingenious argument for their cause in the explanations of Aristotle. There was no differentiation of moment between the marrow of the long bones and the marrow of the long spinal canal. In both instances in this dwelling place and in these routes of travel the germ plasm is safely ensconced in rigid walls of bone which protect it from the assaults of the environment, to which all other matter living and dead is subjected.

There is a curious trend to Hicks' commentary[23] on the relation Aristotle believed to exist between nutrition and generation. From his point of view, which was the end in view, frank teleology, nutrition has for its end the preservation of the species. "The primary soul is that which reproduces the species," and we have just caught sight of this soul permeating, or actually being, the germ plasm on its way through the spinal marrow to the testicles. Hicks says Barco cites the lines of Dante in the "Divina Commedia" and supposes the poet is indebted to the commentary of Thomas Aquinas on this assertion of Aristotle.

> Sangue perfetto che mai non si beve
> Dall' assetate vene, e si rimane
> Quasi alimento che di mensa leve,
>   Prende nel core a tutte membra umane
> Virtute informativa, come quello
> Ch'a farsi quelle per le vene vane,

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[20] Coming to be and Passing away. 314a–29.

[21] Henneguy. Chromatine et chromosomes au point de vue de la transmissions des caractères héréditaires. *Scientia*, Bologna, 1925, v, viii, 88.

[22] Bounure, L. La vie et l'oeuvre de Frédéric Houssay. *Isis*, 1925, VIII, xxiii, 433.

[23] De Anima, 416b-15.

Ancor digesto scende ov'e piu bello
Tacer che dire; e quindi poscia geme
Sovr' altri sangue in natural vasello.[24]

We see here the blood-carrying formative nutriment everywhere, but it is "perfect blood" which carries the panspermia from everywhere within the body of man to the spinal marrow, and from the testicles of the male it arrives at the "natural vessel" of the womb in the female. The physiological process is then further narrated by Dante in the light of the doctrine of Aristotle. Upon these lines, which are many more than those here quoted, Fratecelli in his latest edition gives us a long commentary quite supporting Barco, as noted by Hicks. He quotes Vico as saying the ancients called this vehicle the "perfect blood" and in a true sense, because "it is the flower of the blood."

These being the lines of Aristotle's teaching of the generation of man and the thoughts it gave rise to in the poet of the pre-Renaissance, the female contribution is not the material of generation, but the material for the sperm to work on. That material is the catamenia, and they are a secretion.[25] It is singular that in Aristotle, the biologist and comparative anatomist, there did not arise the thought that an egg ought to exist in the material for generation coming from the human female, as from birds and reptiles. We are justified in believing this obtuseness was due to the conviction of the ancient male that the human female was such an inferior being that she had no part in the creation of the species which he was bound to respect. All she had to do was to stir the soup and feed the embryo. Plato in the "Republic" makes Socrates protest against this ideal of womanhood, but Aristotle, though he is said to have dearly loved his wife and her successor, was not impressed. Let us make no mistake. The philosopher like other children of women is the child of the era in which he lives and to it he owes the color of his deepest thoughts. Man is made out of the material of the female, but "is that the essence of a man?" he asks. Then in a sort of despair as to the "essence, is it the sperm? Is it the catamenia even?" No, it is the "Quiddity." I imagine he means it is the soul of man transmitted in the sperm. That is the "flower of the blood," which carries a spark of the divine soul of man, the living fire with which God has endowed His creatures. The modern materialist has every right to rebel against the Weismannian tendency in the biology of the day as a mystical one. As the majority of the biologists exhibit their idea of the germ plasm, it has all the characters of the "soul" of the ancient philosophers. But the modern materialist does nothing of the kind. He rebels not at all.

[Boyle: Opera Omnia Venetiis, 1697.]

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[24] Purgatorio, xxv, 37ff.

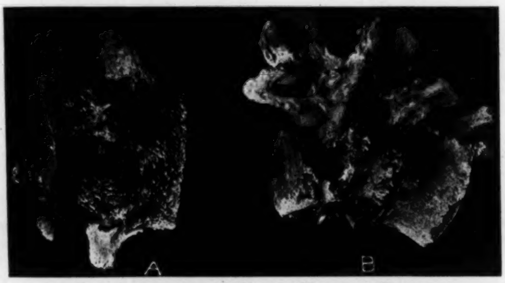
[25] Generation of Animals, 727b, 31, 727a, 30; Metaphysics, 1044a, 33.

POTT'S DISEASE IN EARLY HISTORIC PERU

By ROY L. MOODIE, PH.D.

SANTA MONICA, CALIF.

THERE are a number of specimens in the San Diego Museum of Anthropology from Peru showing undoubted evidences of the ravages of tuberculosis. Dr. Ales Hrdlicka, however, regards all of these specimens as of post-Columbian time, hence showing clearly the ready susceptibility of the prehistoric Peruvians and their descendants to this dread disease, from which they had been curiously free prior to the coming of the Spaniards, with their intense religious intolerance and their Caucasian diseases. The subject is of sufficient importance for a brief notice and figures of the evidence. It is an interesting commentary on the lack of primitive races to an immunity from white man's diseases, and shows how important is a study of the diseases and injuries indigenous to Peru, before the coming of the white race introduced complications. It is a presumptive conclusion that these remains showing tuberculosis were Indian and not white, since they were found in ancient Indian burial grounds, interment in which would have been abhorred by the Spaniards.



Pott's Disease in Early Historic Peru.
A: Two Lumbar Vertebrae, Post-Columbian, of Peruvian Showing Necrosis of the Bones, with Sinuses, and Coalescence of the Bodies of the Bones.
B: Three Lumbar Vertebrae Showing Marked Pathological Deformation, Due, Doubtless, to the Ravages of Tuberculosis. Specimens in the San Diego Museum of Anthropology at Balboa Park.

The following data give the facts furnished by Dr. Hrdlicka, who collected, with his own hands, all the material in the collection, to which previous papers in the ANNALS have referred. The data are given here as a matter of passing interest because they will not need to be given in future studies which will be restricted to prehistoric evidences of disease and injury, belonging definitely in the field of paleopathology.

Hrdlicka's catalogue of the collection gives the following:

No. 767. Pelvic bone (probably post-Columbian) from Chilca, Peru. Male. Tuberculosis (?).

No. 768. Two pelvic bones (probably post-Columbian) from a ruin near Huarochiri, Peru. Adolescent female. Tuberculosis (?).

No. 769. Sacrum (probably post-Columbian) with left pelvic bone, from Chilca, Peru. Female. Tuberculosis (?).

No. 770. Sacrum (probably post-Columbian) from Chilca, Peru.* Tuberculosis (?).

No. 771. Right pelvic bone (probably post-Columbian) from Chilca, Peru. Female. Tuberculosis.

No. 772. Tibia (probably post-Columbian) from near Chavina, Peru. Tuberculosis (?).

No. 773. Three upper lumbar vertebrae (probably post-Columbian). The lower two bones are fused and show a pathological condition, probably due to tuberculosis.

No. 774. Two lower lumbar vertebrae (probably post-Columbian) from Chilca, Peru. Fused, probably tuberculosis. (This specimen is shown in A, of the accompanying figure.)

No. 775. Two lumbar vertebrae (probably post-Columbian) from Chilca Peru. Fused, probably tuberculosis.

No. 776. Five dorsal vertebrae (probably post-Columbian) from Lomas, Peru. Body of one shows cavity and flattening possibly due to tuberculosis.

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* The location of these places may be determined by reference to the map (Fig. 15), in the December, 1926, number of ANNALS OF MEDICAL HISTORY, in my Studies in Paleopathology, XVIII.

MASTOIDITIS IN PRE-COLUMBIAN PERU

By ROY L. MOODIE, PH.D.

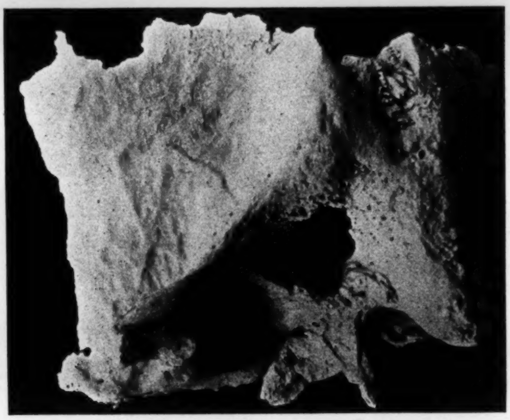
SANTA MONICA, CALIF.

NO example of middle-ear suppuration has ever been noted in prehistoric times, and I am encouraged in placing the present example of a perforating mastoid abscess on record because of its great rarity.

The catalogue data at the San Diego Museum of Anthropology, furnished by Dr. Ales Hrdlicka, follow:

> No. 44. Prehistoric fragment of skull from Lomas, Peru. Male. Mastoiditis, with abscess perforating outward as well as inward.

The good drainage, which was evidently active for a long time, was doubtless the reason why a fatal cerebrospinal infection had not developed. The abscess may not have penetrated the dura mater. Evidences of healing are present. It would be interesting to know the cause of death in this individual, who carried such a huge infection for so long.



MASTOIDITIS IN PREHISTORIC PERU.

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“MIDDLEMARCH” AND THE PHYSICIAN

(“MIDDLEMARCH” AND SIR WILLIAM OSLER)

By H. A. DEROW, M.D.

BOSTON, MASS.

“ASK the opinion of a dozen medical men upon the novel in which the doctor is best described, and the majority will say ‘Middlemarch.’”

Sir William Osler.

George Eliot’s chief object in “Middlemarch” was to show that “There is no creature whose inward feeling is so strong that it is not greatly determined by what lies outside it, and in obedience to this law, character grows or decays.” Lydgate, the physician, is the central figure of special interest whose career is emblazoned with a great moral for the medical profession.

Settling in Middlemarch, a provincial town of England, Lydgate decided to be a good Middlemarch doctor and by that very means keep himself in the track of far reaching investigations. In his student days, his scientific interest had taken him to London, Edinburgh and Paris. He longed to demonstrate the more intimate relations of living structure by diligent application, not only of the scalpel, but of the microscope. Such was Lydgate’s plan of his future: to do good small work for Middlemarch and great work for the world. He determined to keep away from the range of London intrigues, jealousies and social truckling, and win celebrity, however slowly, as Jenner had done, by the independent value of his work. Lydgate was ambitious above all to contribute towards enlarging the scientific rational basis of his profession.

> I should never have been in any profession that did not call forth the highest intellectual strain, and yet keep me in good warm contact with my neighbors.

His zeal toward the establishment of the medical school in the town may be inferred from:

> There are few things better worth the pains in a provincial town like this. A fine fever hospital in addition to the old infirmary might be the nucleus of a medical school here, when we once get our medical reforms; and what would do more for medical education than the spread of such schools over the country?

The extent of the scientific knowledge of Lydgate’s colleagues in Middlemarch (the time of the novel is about 1830), as expressed by him, is indicated by the following:

> As to the higher questions which determine the starting point of a diagnosis—as to the philosophy of medical evidence—any glimmering of these can only come from a scientific culture of which country practitioners have usually no more notion than the man in the moon.

Copious bleeding and blistering was the order of the day and professional practice consisted chiefly in giving a great many drugs, the public inferring that it might be better off with more drugs, if they could only be gotten cheaply, so that a pitiful deluging of patients with physic resulted.

Lydgate soon incurred the animosity of his brother-physicians by diagnosing with the utmost facility conditions that were enigmas to his colleagues. His new methods of treating fever, according to Louis, of Paris, met with smarting criticism, and his attempts to discredit the sale of drugs were called ungentlemanly. His failure to dispense drugs was considered offensive both to the physicians whose exclusive distinction seemed infringed upon, and to the surgeon-apothecaries with whom he ranged himself. Only a short time before, they might have counted on having the law on their side against a physician who dared to ask for payment except as a charge on drugs! Despite the severe judgment accorded him by his fellow-physicians, he tried the expectant theory of treatment in a case of lobar pneumonia in a robust man, permitting Nature to do its share in restoring the patient's health, instead of filling him with shotgun prescriptions. The patient got well.

The care which he exercised in weighing carefully all items that enter into consideration in arriving at a prognosis in a case, and a display of that rare virtue in physicians, i.e. humility, may be gleaned from his account of a patient who suffered from arteriosclerotic heart disease and who had just sustained a stroke of apoplexy:

> The first thing that I must impress upon you is that my conclusions are doubly uncertain—uncertain not only because of my fallibility, but because diseases of the heart are eminently difficult to found prediction on. In any case, one can hardly increase appreciably the tremendous uncertainty of life.

Lydgate felt sure that if he ever married, his wife would have that feminine radiance, that distinctive womanhood which must be classed with flowers and music, that sort of beauty which by its very nature is virtuous, being moulded only for pure and delicate joys.

> I feel sure that marriage must be the best thing for a man who wants to work steadily. He has everything at home then—no teasing with personal speculations—he can get calmness and freedom.

His marriage with a selfish and socially ambitious young provincial marked the beginning of the sacrifices he was to make subsequently at the expense of his ambitions and ideals. His wife was wholly at variance with his ideals, and lacked that sympathy of purpose towards her husband's activities that is so essential in a physician's wife. She harassed his plans and thoughts with an obstinacy that produced its own bitter effect later in his life. Debts, far in excess of her husband's income, were incurred by her, handicapping him all the more. She tried to interfere with his medical practice, and dictate the course of action for him to follow in treating his patients. The financial indebtedness in which he soon found himself, due to his wife's extravagances, pressed upon him constantly, and cast the blight of irony over all his higher efforts.

One may easily discern from several dialogues between Lydgate and his wife the state of affairs that existed between them:

> "Why, what can a man do when he takes to adoring one of you mermaids? He only neglects his work and runs up bills."
>
> "I am sure you do not neglect your work. You are always at the Hospital, or seeing poor patients, or thinking about some doctor's quarrel; and then at home you always want to pore over your microscope and phials. Confess you like these things better than you like me."
>
> "Haven't you ambition enough to wish that your husband should be something better than a Middlemarch doctor?"
>
> "Still, I do not think it is a nice profession."
>
> "It is the grandest profession in the world. To say that you love me without loving the medical man in me, is the same sort of thing as to say that you like eating a peach but don't like its flavour."

The habits of Lydgate's profession, his home preoccupation with scientific subjects, which seemed to her like a morbid vampire's taste, his peculiar views of things which had never entered into the dialogue of courtship, all these continually alienating influences made his presence dull to her.

To Lydgate it seemed that he had been spending month after month in sacrificing more than half of his best intent and best power in his tenderness for his wife, bearing her little claims and interruptions without impatience, and above all, bearing without betrayal of bitterness to look through less and less of interfering illusion at the blank, unreflecting surface her mind presented to his ardor for the more impersonal ends of his profession and scientific study, an ardor which he fancied that the ideal wife must somehow worship as sublime, though not in the least knowing why. Lydgate was aware that the concessions to his wife were often little more than the lapse of slackening resolution, the creeping paralysis apt to seize an enthusiasm which is out of adjustment to a constant portion of our lives.

Under the first galling pressure of foreseen financial difficulties, and the perception that his marriage, if it were not to be a yoked loneliness, must be a state of effort to go on loving without too much care about being loved, he had once or twice tried a dose of opium. It is indeed an easy matter for a physician confronted with such troubling situations to yield to that most pernicious and yet soothing mental anodyne, opium, thereby shirking the reality of his pressing and immediate responsibilities. But Lydgate had no constitutional craving after such transient escapes from the hauntings of misery.

How different a course De Quincey pursued when beset with difficulties of a somewhat dissimilar nature! De Quincey confessed that:

> I cannot face misery, whether my own or not with an eye of sufficient firmness. . . . O just, subtle, and all conquering opium! that to the hearts of rich and poor alike, for the wounds that will never heal, and for the pangs of grief that "tempt the spirit to rebel," bringest an assuaging balm; eloquent opium! that with thy potent rhetoric stealest away the purposes of wrath. . . . Thou only givest these gifts to man; and thou hast the keys to Paradise, O just, subtle and mighty opium!

Such rapturous praises of opium did not tempt our Lydgate further. He possessed a character that was able to cope with these precarious financial conditions, but his wife's obstinacy was not conquerable. Lydgate soon realized the failure that had come of his marriage and felt, "I am a fool. Haven't I given up expecting anything? I have married care, not help."

He accepted his narrowed lot with sad resignation. He had chosen this fragile creature and had taken the burden of her life upon his arms.

To his friends, Lydgate was always considered a successful man. He had gained an excellent practice, alternating according to the season between London and a Continental bathing-place; and had written a treatise on Gout. His skill was relied upon by many paying patients. His acquaintances thought him enviable in the possession of so charming a wife.

Lydgate always regarded himself a failure: he had not done what he once meant to do. His ambitions to carry on the work of the great Bichat in the quest for the "primitive tissue" were never realized. It was regrettable that Lydgate, gifted with great powers and fired with high ambitions, should be brought down by the domestic reality of his wife to a very ordinary achievement. The cares which his marriage to a selfish and socially ambitious girl brought upon him were serious handicaps to the realizations of his ideals. He called his wife a basil plant once; and when she asked for an explanation, said that basil was a plant that flourished wonderfully on a murdered man's brains!

We may sharply contrast the character of Lydgate in "Middlemarch" with that of Doctor Bovary in Flaubert's "Madame Bovary." Flaubert tells us that when Dr. Bovary was a medical student, many hidden things within him came out; he learned couplets by heart, learned how to make punch, and finally, how to make love. Thanks to these preparatory labors, he failed completely in his examinations for the ordinary degree. He passed a second examination after undue cramming. Dr. Bovary always regretted that during his student days, his purse was never full enough to treat some little work-girl who would have become his mistress.

Being much afraid of killing his patients, Dr. Bovary only prescribed sedatives, and from time to time an emetic, a foot bath or leeches. He had no ambition. He was often humiliated at the bedside of a patient by a consultant whom he had called in. He found that "people still have recourse to novenas, to relics, to the priest, rather than come straight to the doctor."

Dr. Bovary's marriage was also a dismal failure. His wife was completely disillusioned in him. Before marriage, she thought herself in love; but the happiness that should have followed this love did not come. She had read Balzac and George Sand, seeking in them imaginary satisfaction for her own desires. In short, domestic mediocrity drove her to lewd fancies, marriage tenderness to adulterous desires. But Dr. Bovary could not have rightfully called his wife a "basil plant" because the "murdered man" lacked the brains on which it could flourish!

In the "Physician" by Dr. J. M. T. Finney (1923), the last chapter is devoted to the "Causes of Failure" of physicians. Briefly mentioned, he states them: inheritance of a fortune by the physician; a rich wife exercising a very discouraging influence upon the practice of so arduous a profession; acquisition of bad habits upon the part of the doctor; failure to keep abreast of progress in his profession; fatal defect in character which may be congenital. But no mention is made of the "basil plant" wife who defeats her husband's ambitions and ideals. A rich wife, as Dr. Finney says, does not necessarily mean the failure of the physician, as there are too many exceptions to this. It is difficult to evaluate the relative importance of the causes of a physician's failure, but I feel that of prime consideration is the wife who is in collision with her husband's purpose in life.

Sir William Osler often referred to Lydgate's ambitions and marriage in his addresses and letters to medical students and young celibate physicians on the subject of the advisability of marriage for a young physician who has just been launched into the *Anfang* of his career. In Dr. Osler's address on "Physic and Physicians as Depicted in Plato," (1892) he said:

> Writers of our times, like George Eliot, have told for future generations in a character such as Lydgate, the little everyday struggles and aspirations of the profession of the nineteenth century.

In the only footnote to his address on "Internal Medicine as a Vocation" (1897) in referring to Lydgate, Dr. Osler wrote:

> This well-drawn character in George Eliot's "Middlemarch" may be studied with advantage by the physician; one of the most important lessons to be gathered from it is—marry the right woman!

Further, in the body of his address Dr. Osler, alluding to the affair of the heart that spelled ruination for Lydgate, said of the physician who had just entered into the realm of internal medicine: "He must put his emotions on ice: there must be no 'Amaryllis in the shade,' and he must beware of the tangles of 'Neaera's hair.' "

Dr. Harvey Cushing in his "Life of Osler" in commenting upon this address writes:

> The address might almost be transcribed as an autobiographical sketch, so closely does it reflect his [Osler's] own "modus vivendi." Visualizing a young Lydgate, who does not get entangled in the meshes of specialism and whose object it is to become a pure physician, he took him through what Sir Andrew Clark had spoken of as the three stages—the dry-bread period, the bread-and-butter period, and the period of cakes-and-ale. . . . Most happily married himself and knowing how often the tragedy of Lydgate was repeated in the profession, Osler used to reiterate the warning to his young friends to keep their affections on ice. His advice was not always taken.

Among Osler's notes for an intended Introduction to the "Litteraria" section of his library catalogue there is a long one which reads in part as follows:

> Ask the opinion of a dozen medical men upon the novel in which the doctor is best described and a majority will say "Middlemarch." Lydgate is at once an example and a warning. . . . An unmitigated calamity, his marriage ruined his intellectual life in a soul-wasting struggle with worldly annoyances. . . . George Eliot was happy in her relations with the profession, and we owe her a deep debt for this Early Victorian sketch of it in a provincial town. It is often said that my Brother Regius of Cambridge, Sir Clifford Allbutt, was the original Lydgate. Nothing in their careers is in common, save the training and the high aspirations. There is a basis for the statement. When Dr. Bastian lived at Hanwell, one Sunday

afternoon, he had just returned from a visit to George Eliot, and the conversation turned on "Middlemarch" which had recently appeared. He said that the matter had been discussed in her house that afternoon, and she confessed that Dr. Allbutt's early career at Leeds had given her suggestions.

A young medical graduate, who had sought Dr. Osler's advice on the subject of marriage, and had married despite the contrary admonition, subsequently received the following letter from Dr. Osler:

> "Dear———,
>
> Do not worry, you could not offend me, nor did you fool me altogether. Although I did not refer to it, I had a feeling that you had made up your mind. Long experience has taught me that in these cases, advice is sought to confirm a position already held. In the affairs of the heart, in which I have had a long and curious experience, I do not remember an instance in which my adverse counsel was taken. . . .
>
> Of course, I know you love her, or think you do, which at this stage of the game is the same thing. Only remember that the blind bow-boy plays the devil with us sometimes. I tried to warn you against what I felt was an indiscreet marriage.
>
> You have a career ahead of you which the right woman will help and the wrong woman wreck. A level-headed fellow can do anything he wishes with a wife if love blossom into trust, gentleness and consideration. A doctor needs a woman who will look after his house and rear his children, a Martha whose first care will be for the house. Make her feel she is your partner arranging a side of the business in which she should have her sway and way. Keep the two separate. Consult her and take her advice about house and children, but keep to yourself, as far as possible, the outside affairs relating to the practice.

Osler's remarks on the "affairs of the heart" of medical students may be advantageously included here:

> The mistress of your studies should be the heavenly Aphrodite, the motherless daughter of Uranus. Give her your whole heart, and she will be your protectress and friend. A jealous creature, brooking no second, if she finds you trifling and coquetting with her rival, the younger, earthly Aphrodite, daughter of Zeus and Dione, she will whistle you off and let you down the wind to be a prey, perhaps to the examiners, certainly to the worm regret. In plainer language, put your affections in cold storage for a few years, and you will take them out ripened, perhaps a bit mellow, but certainly less subject to those frequent changes which perplex so many young men. Only a grand passion, an all-absorbing devotion to the elder goddess can save the man with a congenital tendency to philandering.[1]

During the "dry-bread period" of which Osler spoke, it may not be unwise to give special thought to Bacon's essay on "Marriage and Single Life," from which I quote:

> He that hath wife and children hath given hostages to fortune; for they are impediments to great enterprises, either of virtue or mischief. Certainly the best works, and of greatest merit for the public, have proceeded from the unmarried or childless men, which both in affectation and means, have married and endowed the public.

"Marry the right woman." Who is she? What are her attributes and virtues? In his letter to the medical graduate that was mentioned before, Dr. Osler tries to define her. I doubt whether any description elsewhere compares with that given in the Book of Proverbs in the last chapter beginning at the tenth verse. Here we find a superb delineation of the ideal woman as wife and mother, especially applicable to the wife of the physician:

> Who can find a virtuous woman? for far above pearls is her value.
>
> The heart of her husband doth safely trust in her, and he will not see his gain diminish.
>
> She treateth him well not ill, all the days of her life. . . .
>
> She spreadeth out wide her open palm to the poor; yea, her hand she stretcheth forth to the needy.
>
> She openeth her mouth with wisdom, and the law of kindness is on her tongue.
>
> She looketh well to the ways of her household, and the bread of idleness she doth not eat.

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[1] Master-word in medicine, *Johns Hopkins Hosp. Bull., Balt.*, 1904, xv, 1.

> Her children rise up, and call her blessed: her husband, also, and he praiseth her:
>
> "Many daughters have done virtuously; but thou excellest them all!"

In reading "The Book on the Physician Himself and the Things that Concern His Reputation and Success" by Dr. D. W. Cathell,[2] I had expected to find some allusion to the physician's wife as a possible factor, and found that mention was only made of the "meddling" wife of the doctor:

> There is no end to mortifications, compromises and estrangements into which a physician's prying and babbling wife may lead him by her tittle-tattle, about "The Doctor's Patients."

A little volume, "The Physician's Wife and the Things that Pertain to Her Life" by Mrs. Ellen M. Firebaugh, made its appearance in 1894, after the publication of the 9th edition of Dr. Cathell's treatise. By depicting the daily trials and tribulations of a country physician, she illustrates how the practitioner's wife may serve her husband best. This little book should be read by the wives of physicians as an example of how much a wife may mean in the life of a doctor.

Dr. W. S. Thayer, in his paper on "Osler, the Teacher"[3] spoke of Sir William Osler's wife: "If you can select a wife with a heart as big as your own, whose generous welcome makes your tea-table a Mecca . . . ."

In Dr. Cushing's "Life of William Osler" is printed a portion of a letter that was sent to Lady Osler by one who sojourned at Sir William Osler's home in Oxford for a week-end. Dr. Osler called it a "gushing letter—so true!" It is a tribute to the ideal wife of the ideal physican. The letter, in part, is as follows:

> I cannot tell you how much I enjoyed my week-end with you. I have inherited from some miserable Anglo-Saxon ancestor the unfortunate quality of being too shy to express my appreciation, face to face. But from this distance I can tell you frankly what I feel, and that is, that you are simply wonderful. You keep open house; you are always "en évidence" as it were. You are always the same, welcoming them in and speeding the parting guest, whether they are maids, matrons or children. You do the right thing always. You must be tired, bored, at times sick to death of it, but you never appear to be. You spend your life looking after other people, looking after the sick and the afflicted, helping the lame dogs over the stile. Your whole life is lived for others and the fact that you get a certain amount of unselfish pleasure out of being able to do it doesn't alter in the least that you are "wonderful." I tell you candidly, there is no woman that I have as great an admiration for as I have for you. My mother, Aunt ———, and you are the three that make my ideal. And none of you ask for praise or applause, or expect it. You probably think I am ridiculous to write like this, but I mean it, and I think that we all make a mistake sometimes in not expressing appreciation. I love the artistic side of your house—the garden, the roses, the ease, the comfort, the blue carpet on the stairs, though it may be worn; the birds in the morning, the comfortable bed, the towels worked in blue! the writing table with everything on it, the books. All is perfect, but behind it all, I appreciate you, and the organizing power. Other people, many of them, appreciate this but they don't know why. I do—it is YOU!

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[2] Ed. 12, Phila, 1913.

[3] *Johns Hopkins Hosp. Bull.*, Balt., 1919, xxx, 198.

PATRISTIC MEDICINE*

By STEPHEN D'IRSAY, M.D.

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WHEN Roman medical civilization sprung in full bloom at Greek hands, the world was already feeling tired and restless unto sleep. After Galen had spoken his immense erudition and after Celsus added his elegant finish of learning, there was something lacking. Something was left unsaid and something remained to be done. A certain coldness and emptiness drew across the scene and the eager world of learners and sufferers waited for something, was ready to fervently receive something, not sensing what it was to be. That something came, it enveloped all phases of civilization, permeated yeast-like the whole structure. It soaked through society vertically, marking one stratum after another; it also made its way horizontally, and its stamp appeared on the forehead of every type of cultural activity. This was Christianity. When all Greek learning was assembled, when all the unsystematic empiricism, preserved by a Pliny and Solinus, was gathered, medicine stood forth as a science and an art in the antique sense. But is this all? Is medicine nothing more? When all was said and done, there was lacking charity and genuine altruism. Then came the third Gospel. Col. IV, 14: Luke, the beloved physician . . . salutes you.

Nowhere is the story of the Divine Healer more sweetly told than in the book of Luke the Physician.[1] It brought men back to prehistoric, primitive memories, motives everlasting; it warmed hearts toward the sufferers, the helpless and unfortunate. From the very beginning comforting of the sick was one of the cardinal Christian virtues and complete altruism became so fundamental an ethical standard that it was part of faith. Thus Christendom introduced medical ideals which meant an advance, which meant the reappearance of rationally adopted ancient desires. These ideals were destined to amalgamate with Greek scientific concepts, a fusion out of which the highest modern medical standards were to issue.

This, however, is but one aspect of Christian influence upon contemporary medicine, an emotional influence which possibly was not felt until much later. There is also another one, and that is the direct intellectual interest of the Fathers of the Church in things medical. A great number of ancient Christian writers mention matters of anatomical, physiological or medical bearing, and from the earliest times such works, besides occasional passages, are extant. This fact has a very large significance, as the developments unfailingly show. The human body inevitably became a center of interest for the Fathers; this was only natural in the light of an anthropocentric theology. Their interest was by no means scientific, an acquisition of knowledge *l'art pour l'art.*[2] They lack the scientific spirit of detachment, they cannot look objectively upon the world. They have certain aims in view, either ethical or epistemological; and they find ample corroboration of firm theological frames in phenomena of Nature. The motive, however, does not alter the importance of patristic exposition. Its importance for us lies not so much in their possible originality, but in their gathering activities. Not as creators, but as conservators did they contribute a share to the history of medical civilization. It is from this point of view that we have to appreciate intellectual patristic work. In the emotional field, as I remarked, they sound a new keynote.

But besides these two territories, account has to be taken of a third one: of the field of action. Several ancient Christians, in

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* Read before the Boston Medical History Club, Dec. 21, 1925.

East and West, gave an impetus to institutional development, to the monastic school and hospital which remained foci of medical labor throughout the tempestuous Dark Ages, reaching into the fulness of medieval civilization.

The second century already felt the impress of Christian ethics and mode of life. It peculiarly affected medical thought and gave things a turn which well agreed with stoic norms. Galen (in a text extant only in Arabic translation) praisingly speaks of these strange men and women, persecuted, hunted and yet ever growing in a mode of life intellectually firm, though primarily emotional. "Their attitude [viz., that of the Christians] corresponds to that of the true philosopher, for they despise death and they reject in sacred scorn sexual relations. There are amongst them both men and women who refrain from marriage through all their lives; and what is more, there are some who achieved such heights of self-control and intellectual endeavor that they are equal to any philosopher."[3] Here at last Galen finds a group of folk who are willing to translate precepts of mental hygiene into terms of life and view intellectual life from a new level. The man in whose estimate "the best physician is also a philosopher" certainly was well qualified to judge of such a new departure. A balance in these new standards, however, was still lacking. There was no moderation. Doctrines were unsettled and literal interpretation of Scripture created tensions of holy fervor. Castrations were not uncommon; for such an injunction was read out of Christ's words.[4] Justin Martyr tells us of a youth in Alexandria whose castration the local physicians refused to perform without a permit from the Roman Governor. This permit Felix, the Governor, did not consent to give.[5] Battles were waged over this point for many a year; Domitian's prohibition[6] was followed by opinions, Christian and pagan, until the imperial attitude was confirmed and the whole question of selfmutilation settled by the great council of Nicaea in 325.[7]

Christian normative standards of moderation of temperance and wise restraint were enjoined to the communities by the earliest Fathers. Their fare was simple, they refrained from much meat and eggs and consumed wine wisely. In this they followed the Apostle's advice as set forth by Clement of Alexandria. When sick they were probably surrounded by theurgic and hieratic practices. On this the Epistle of St. James (v, 14) throws curious light.

Their activities, as all contemporary observers discerned, were aligned toward the spiritual aspect of things. The gymnasium and the palaestra were not for them. Mentors like Clement of Alexandria,[8] although emphasizing the old doctrine of *mens sana in corpore sano*, urging upon his flock the care of a beautiful complexion and a well-formed body, being in this utterly Hellenic, differed from the pagans in methods. Not the discus, and not the functions of the arena, but a strenuous life should be the ideal of the Christian. Sports for their own sake should not be cultivated. Concentrate upon the soul, live strenuously, attend the sick, spend nights at their bedside, render helpful service where you can, oil and rub the bodies of your friends when in need, this will furnish ample exercise. The primary and all-important thing about man is his immortal soul, and all other aspects of our existence are subservient to it and to its goal. *Mens agitat molem* and the body will fall into line and perform its functions well if animated by an active and vigilant soul. Clement also reminds us that we must fight against too much sleep. The tired body needs sleep; the soul, however, does not. Why, then, let the more important part of ourselves be condemned to inactivity when life is so very short? Throughout the Middle Ages this important doctrine of reducible sleep requirements held its own (as the Regimen Salernitanum shows among other works) and it can be traced back to the patristic position which in turn relies on Scripture.

While the Christian communities and

individuals adopted a definite scheme of life, their contact with Graeco-Roman science was still uneasy and unsettled. Thaumaturgy, as stated, played a large rôle, and the results and practices of the pagan medical world were ill-understood, strange and had no significance. In the first two Christian centuries no attempt at integration was made. Medical references with scientific bearings are hardly to be found in the Greek Christian writers of that early period: Ignatius of Antioch, Papias of Hierapolis, Aristo of Pella and others. True, situations of medical interest may be gleaned from one and another; the observations of Justin Martyr, which I referred to, may be taken as an example. These observations throw sidelights upon life and habits of scattered communities, upon the slow crystallization of beliefs, like Athenagoras' peculiar statements concerning immortality.[9] Still, these are unorganized. They do not constitute an attempt to teach or propagate, to preserve or yet to develop science. Such an attempt had to come from some organized center of learning and some author with the qualifications, the position and the prestige of a great teacher. Such centers were quick to come into being. Edessa, Nisibis, Antioch and mainly Alexandria became foci of Christian learning. From the middle of the second century there existed in this city the Didascalion, a Christian college, originally a catechetic school, later an institution of *secular* learning, competing with the ancient Museum and laying the foundations of the trivium and quadrivium in a Christian sense. Athenagoras, of whom mention was made, an ex-disciple of the Athenian Academy, became a member of this remarkably ecumenical school (to use Professor Bury's phrase) the first authenticated head of which was St. Pantaenus. He in turn came from that Zoa Poikile where the ecumenic thought was first proclaimed. Stoics and Platonians united here in Christian thought. Both Clement and Origen taught in the Didascalion and when the great Neo-Platonic revival of the Egyptian third century set in, it found these remarkable Fathers receptive indeed. In the rich city of Alexandria, seething with intellectual interests, soaked with Neo-Platonic influence through which the Greek scientific spirit acted, arose the first direct connections between pagan and Christian natural science, in the "Paedagogus" and the "Stromateis" of Clement.[10] A metaphysics and a psychology essentially Platonian, with an Aristotelian *Einschlag* as the ten categories show, and a fragmentary physiology derived from Diocles and his Sicilian School characterize his teaching. He was not a *medicus*, nor yet a *physicus*. He was a lay erudite, rising from the well-to-do middle class, excellently educated and sufficiently acquainted with physiological and related teaching to enable him to put the Christian case tersely and intelligibly. Strong symbolism pervades everything and the aim of all is teleological.

The first scientific synthesis in Christianity, however, comes in the Latin world, so far lagging behind. So far (in the second century) Latin Christian literature consisted of the Afra and Itala Bible versions, the Martyriology of Scillium and similar acts, and created nothing new.[11] Then, around 200, came Tertullian with his "Apologetics," "De Anima," "Ad Scapulam," and so forth, thirty-one extant books altogether, in which conceptions are unified, solid and in many respects original, and would have sunk deeper into posterity but for his unfortunate Montanist turn. This passionate and violent man, a writer of the first rank and a stirring intellect, arose in Africa, the same province which contributed most to early Christian Latin erudition and literature.[12] His contemporary, Clement, was unknown to him. Alexandria was far indeed from Carthage, not geographically only. Clement was more or less a Platonist, Tertullian an avowed realist[13] who set down those principles of psychology and theory of knowledge to which medieval Aristotelianism so faith-fully adhered. The Greek world throughout the entire third century stood in the sign of Neo-Platonism, from Plotinus to Iamblichus, and this influence Christian philosophy could not escape, as far as (to point it out again) the Greek world was concerned. Not so in the Latin world: Tertullian combats intellectualism, and when at the beginning of the fourth century another pregnant personality, Lactantius, appears,[14] he can but repeat his realism, which henceforth was to be universally accepted: Our knowledge of things depends on sense-perception and the senses are the basis of our intellectual processes. Hallucinations and illusions are well possible, but then the senses are not at fault. An oar immersed in water presents a distorted and shortened shape, but the reason for this distortion is not in the eyes, it is in the distorting medium, water, between our eyes and the object.[15] Another possibility is offered in mental changes which do not permit correct appreciation of facts properly presented by the senses.[16] Otherwise, the intellect follows the senses in apperception.[17] The functions of the two must be well understood: the senses simply receive, they are passive, the intellect forms the judgments: *sensum enim pati, non opinari; animam enim opinari.* Therefore the senses are not, but judgment often is deceptive.[18]

The erudition of Tertullian is immense.[19] He is familiar with Greek learning, classical and Hellenistic, he frequently quotes and criticizes Plato, Aristotle and Anaxagoras, to mention but a few. But he knows medical literature equally well. References to Hippocrates,[20] Galen and even Soranus, already in the Muschionic translation, are many. He is acquainted with the various schools and distinguishes between them, and emphasizes particularly the work of the methodists like Asclepiades and the late Soranus. His problem is the seat of the *principale*, the *summus in anima gradus vitalis et sapientialis*, or the ἡγεμονικόν which is the animating substance of life. Various medical schools and men offered various theories which are here taken apart and reviewed: According to Soranus (Muschion)[21] it is the whole body in a vague way; Plato claims it is in the occipital section of the head, Xenocrates, an early Platonist, in the temples and Hippocrates in the brain; Herophilus assigns it to the base of the brain (possibly brain stem; *cerebri fundamentum*), Strato and Erasistratus to the meninges (*membranula*); the "physicist Strato" opines to find it in the frontal region between the eyebrows, whereas Epicurus stated it: the seat of the ἡγεμονικόν is the "pericardial blood," the blood itself flowing in and out of the heart, an opinion confirmed by Protagoras, Chrysippus and Apollodorus.[22] They, however, are not the source of his knowledge, that is derived from Scripture. "What do ye cogitate in your hearts?" and similar texts are the irrefutable proof of that which the intellects of Empedocles and the others could but laboriously and feebly grasp. Experiments can never upset these proofs (of course not much can be said for these legendary experiments as those of Asclepiades who proved that decapitated flies may flutter, which well might be, and that goats with hearts removed may bleat, which is not quite as credible). For animal experiments have no bearing on human life, as man is utterly different.

The medical work of two men in particular must have impressed Tertullian, to wit: Soranus and Herophilus. The latter he abuses, calling him a butcher rather than a physician, for his many autopsies and vivisections which were allegedly performed on criminals, *ut naturam scrutaretur.*[23] Soranus most probably draws his interest to obstetrics. In detail he describes the operation of embryotomy.

> It indeed happens that the child is being killed in utero, a necessary cruelty which is performed whenever the child turns crosswise in the outlet impeding birth—a would-be matricide. Therefore physicians carry in their armamentarium an instrument with which, in rotary movement, to dilate the privy parts. On it there is a sickle-

> like knife with which the limbs are cut apart within, in anxious suspension and also a blunt hook with which the whole misdeed is brought unto light in violent delivery. There is also a brazen scalpel which serves to do this murder in the dark, they call it ἐμβρυοσφάκτης . . . . Already Hippocrates, Asclepiades, Erasistratus used this instrument and Herophilus—he who also dissected adults—and even the mild Soranus, as they considered the fetus to be nothing but animal.[24]

This statement is not only important because of the minute description of an obstetrical operation, not only because of the Greek sources of knowledge which clearly appear, but also on account of the Christian idea intimated here, of the soul existing within the embryo and stamping him *man*. The idea is elsewhere further elaborated, not in the classical form of official Church doctrine (Augustinian creationism) but as traducianism.[25] Although the concept of the embryo growing, both physically and spiritually, a developing soul was condemned as heretic and as truly bordering on psychophysical parallelism, nevertheless the soul was there and the killing of a being with soul, a human being, stamps abortion murder. Here begins a long theological tradition.

The psychophysiological discussions in Tertullian are lengthy and take up many phases of epistemology too. All I wished to point out here, was that he drew amply on ancient scientific sources, that he was the first Christian author, if certain physiological and hygienic writings of Clement be disregarded, who attempted a scientific integration. He exhibits the characteristic patristic temper and, being the first and one of the most outstanding Latin writers in Christendom, found wide hearing despite his later heresy.

During the third century Alexandria went its own way with its Didascalion. Clement was succeeded by other great teachers, the strongest of whom was Origen. The theurgic note was predominating in him. He attempted a theological integration which soon (after the appearance of St. Epiphanius and Rufinus in the fourth century) resulted in bitter feuds. The concepts of an eternal and continuous creation, of pre-existence of souls, of subordinationism (denial of the equality of the Father and Son), the doctrine of *apokatastasis* with the destruction of all materialness and the denial of eternal punishment discredited Origen in the long run.[26] He also introduced an excess of allegory in the reading of Scripture which obscured the meanings according to many. His contemporary fame is due greatly to his literary feud with Celsus, that great eclectic and violent anti-Christian. The century in which Origen moved was highly unfavorable to scientific thought. The Church just escaped Montanism and Marcionism and had to prepare for other heavy battles yet to come. Her influence spread rapidly, socially and politically. It was the time of action, of practical, of pastoral work. In the Latin world Africa remains the center of activities, although Novatian enters in Italy; in the Greek world important writers, like St. Gregory Thaumaturgus and St. Dionysius of Alexandria stand forth. No attempt, however, is made to crystallize ancient scientific thought in a Christian sense, until Diocletian bursts out in his last persecution (305) and the final triumph of Christianity is felt. Lactantius comes now forth from Africa again. The "Cicero of the Christians," as he is called on account of his style, writes not in Africa but in Nicomedia, in Asia Minor; the arena of Christian medicine widens. In "De opificio Dei" he sets forth the functions of the human body, in firmly outlined teleology, based upon Diocles the Sicilian physician, Varro the Roman literateur and Tertullian the Father. Accordingly his work is a mélange, not as scientific as Tertullian's, but elegant, pleasing and adapted to lay use. Cicero deeply influenced this author, the "De natura deorum" and the "Tusculanae disputationes" with their profound and serious contemplation of Nature are reflected here. In psychology he repeats the stand taken by his famous predecessor and definitely disposes of Platonism.[27]

The fourth century was rich in momentous events for Christianity: Constantine's triumph and conversion opened the world but immediately precipitated grave heresies. Arianism occupied the better half of the century. Intellectual activity was thereby only stimulated. Gaul suddenly becomes crowded with writers, like St. Hilary of Poitiers; Italy, Spain and Africa continue to produce literature. Equally feverish activity marks the Greek world, which is already completely divorced from the West. Patristic literature pours forth in Latin and Greek, in Syriac and Armenian. Centers of theological learning exist in Alexandria, in Antioch and in various places in Cappadocia.[28] In the midst of this stirring period (he was born around 345) when Christianity was politically in power but had not yet achieved the solid intellectual integration of the Middle Ages, a most erudite figure and forceful personality appears: St. Jerome, the unique Dalmatian.[29] His whole life is full of romantic and colorful episodes, his manifold travels, his delving into the adventure of learning in the magnificent new capital, Constantinople, studying under St. Gregory Nazianzen,[30] then his migration to Rome, that semi-pagan city left in midair now that the old lax gods are gone and the discipline of the new, firm one is not yet established, are tense human documents. In Rome he establishes his famous *salon litteraire*, so different from anything before or after, with a group of noble women who follow him in his erudition and discipline in the world and then, also, outside the world. Some follow him to Bethlehem and essay the first experiment in monasticism. A harsh and iron man, yet full of burning humanity and a true Christian, single-purposed in his great spiritual aim but unblinded and merciful toward the weak, with Bishop Evagrius he seeks clemency from the Emperor Valentinian for the poor adulteress.[31] Small wonder that this great Saint, full of human emotions and sympathies, took an interest in the human body.[32] His discursions are entirely practical. He describes briefly various kinds of fevers, malaria and others (he mentions the so-called hemitritaeus, the Galenic *tertiana imperfecta et accedens ad quotidianam*, probably a tropical and errant form).[33] Gout is referred to[34] and mention is made of the effect of poisons.[35] We hear also of the semi-mythical boulimia,[36] of countless minor troubles, amongst them prostatic dysuria of which he himself seems to have suffered. His diagnosis emphasizes pulse-lore.[37] In therapeutics a good deal is said about surgery. The old principle, *ubi pus, ibi evacua*, is acted upon, advocating of course cautery as a crude form of antiseptic after-treatment.[38] His therapeutics are most impressive, reflecting as they do the practice of his day. There we see the well-known *Dreckapotheke:* hyena bile restores "the clarity of the eyes" (possible reference to cataract), hyena and dog feces cure putrid wounds. The same is also claimed for human feces and the authority he adduces to corroborate is none other but Galen.[39] The porcupine may help in retention of urine; peacock guano mitigates the pain in gout, and the beneficial effects of pig's, goose's, chicken's and pheasant's fat are innumerable "as all medical books testify." Dietary measures are also advocated for gout,[40] the restriction of food generally and drinking of *plisanae* (barley water) is insisted upon.[41] For diseases of the eyes, ointments are recommended (which receive the name collyria).[42] Many a strange belief finds a place on these shelves; are we not told that (when it comes to a survey of the various national "cuisines") the Huns and Scythes eat raw meat, the Vandals dogmeat, the nomad (probably Arab) "ichthyophages" fish cooked on their hot and barren rocks, and that the Scotch are cannibals who consider particularly the nates of the men and the breasts of women their most delicious morsels? Of the Scotch we also hear this: "The nation of Scots have no wives and as if they would have read Plato's Republic and as if they would (consciously) imitate Cato's example, they live promiscuously like beasts, each according to his desire.[43]" Let it be remarked that the belief in cannibalism was then widespread; both Eusebius[44] and St. Jerome[45] relate that the Messagetes eat their elders, rather than have the worms consume them, and that the source of their information is the influential Porphyry.[46] Besides much that is absurd, Jerome insists on the old Christian virtue of moderation[47] and stresses the importance of mental quiet and optimism in therapeutics, a very sound point indeed.[48]

Now as to his sources. Porphyry was mentioned. He also contributed to Jerome's dietetic prescriptions.[49] But there are many others. In the famous library at Caesarea the possibilities of wide acquaintanceship with classical authors were given.[50] Well he knew Hippocrates, the *archiater* and *medicus verus*, whose Epidaurian institution he praises with an eulogy of the ancient oath.[51] It can safely be assumed, however, that he knew Hippocrates only through the medium of Galen. In Galen we find the origin of most of St. Jerome's statements, he seems to be the chief link connecting him with the medicine of antiquity, as is to be expected.[52] Occasionally, Xenocrates of Ephesus[53] as well as Dioscorides[54] contributes one thing or another. Of Latin authors, Pliny mainly, but also faint traces of Quintilian, Varro, Cicero, Lucretius[55] and Tacitus are discernible. Of Christian authors Marius Victorinus, the African *rhetor* two generations before, is mentioned. The main source, however, besides Galen is Marcellus of Side,[56] a Graeco-Roman physician of the Antonine period, author of a collection of medical poems called ’Iατρικά of which 215 lines only are preserved in περὶ δυναμέως τῶν υτῶν of Aetius. To him also attaches the doubtful achievement of a description of lycanthropia (*Werwolfskrankheit*).[57] Both St. Jerome and Eusebius emphasize the fact that no part of Nature, stone or plant, animal or reptile, flying or swimming creature has remained untouched, that Nature has been combed for medicaments to help man in his troubles.[58] And well it is, for is not man the special pride of God and the center of the universe? And still, our lot is a bad one and the Saint fervently exclaims: "Give me a man who suffers no hunger or no thirst, who has no pains nor hurts, who is not afflicted by fevers and who is not tortured by diverse torments and difficulties of urination."[59] Very often indeed it comes home to us that St. Jerome must have felt what Goethe expressed in "Der Menschheit ganzer Jammer fasst mich an." As he enters the Roman catacombs,[60] with their somber and still peculiarly homely and loving atmosphere, he recalls the terror of Aeneas in his *descensus Averni*.[61] And we can see how steadfastly he takes the hand of those who fear with the firmness of one who knows all the evil forces of this world and has a strong remedy, of one who looks ahead with unquenchable optimism. Comfort and sympathy he expects from every Christian. This attitude is peculiarly interesting when assumed in marital relations: "Is your wife sick, never leave her bedside and moan with her when in labor, feel torments when she goes through her trial."[62] Peculiarly interesting, I repeat, for here Christianity lifts woman up into complete equality, here we see the step forward, the difference between the pagan and the Christian union.

Arianism, Manichaeism, Pelagianism one by one rose and died down and the Church comes ever nearer to her settlement and firm finality. During the fifth century the storms begin to abate and it is time for the leaders of Christendom again to state their scientific opinions in the progress of time. St. Augustine states again in unmistakable terms the realist, epistemological and psychological position of the Church and formulates again standard psychophysiological notions.[63] There are three cerebral ventricles with different functions. The anterior one carries the function of sensation, the posterior that of thought, whereas the central cavity serves memory.[64] Some statements are made concerning respiratory physiology[65] and some deal with the gastrointestinal tract, asserting, for example, the Galenic idea that the stomach receives and digests (*ad suscipiendum et coquendum*) nourishment, whereas the intestines serve only the purpose of transportation and elimination.[66] The teleological argument is repeated, now in authoritative form.[67] St. Augustine also states in very definite way his anti-birth control position (*munus autem piorum propagatio est fecunda filiorum*)[68] and his absolute rejection of artificial abortion as murder; a position the second half of which follows entirely of the doctrine of creationism. For the first part of his position I unfortunately cannot account. Genesis may possibly explain it. In any case, however, this position remained forever entrenched, due primarily to St. Augustine's tremendous authority.

Another contemporary, whose literary activity reached into the fifth century was St. Ambrose.[69] In a few passages concerning the pulse[70] and the origin of sperm from the cervical cord he jots down the standard physiological notions of an educated man of his times.[71] He also remarks on the functions of the liver (digestion of food into vapor, *coctio*) and of the brain, recognizing the latter as the center of all sensation and the origin of all nerves.[72] These physiological concepts recur in exactly the same form in the writings of other leaders of theological thought, both in the Greek and the Latin world. Nemesius reasserts the division of cerebral functions into imagination, intelligence and memory, giving them a localization similar to the one we meet in St. Ambrose. He also reiterates the old and ever-lurking Pythagorean lore of the origin of the sperm: it is derived from brain and cervical spinal cord and excreted through the kidneys; he repeats the idea of Erasistratus that the lungs are "foamy flesh," and that of Galen concerning the digestive function of bile. St. Gregory of Nyssa also talks of the three essential organs: heart, liver and brain, in the Galenic sense.[73] All these writers lack, of course, originality, which must not be expected of them. They are but educated laymen who did their best to familiarize themselves with the outstanding medical authorities and who therefore are to be credited with the conservation of ancient lore but not with the creation of a new system. For this they had not the equipment nor was it their aim.

Clearer than in most Fathers appear the results of epitomized ancient physiology in St. Methodius of Olympia, a Greek writer in the fourth century of no mean ability.[74] The Empedoclean theories of elements in transition are taken up, much in the sense of Aristotle. There is a cycle in nature, an organic circulation—a crude forerunner of our nitrogen cycle: fire becomes smoke, smoke air, air again water, and water earth, the earth is formed into trees, the trees again into fire, completing the cycle.[75] It is unfortunate that the text, particularly at this place, is in bad condition. The whole famous work, "De resurrectione," had to be laboriously reconstructed by Bonwetsch from manuscripts, most of which contain the work only in old Slavic versions.[76] Still, the Galenic theory of digestion appears in complete clarity. Digestion comprises three functions, that of coction (in the stomach), of digestion proper, i.e., in modern scientific language, hemopoiesis (in the liver), and distribution (in and through the blood).[77] The excretions περιττώματα in turn are again threefold. The intestinal excretion is one, that through sweat and bile is another and the so-called *respiratio insensibilis* is the third. The theory of digestion proper or hemopoiesis, so closely interwoven with alimentary processes, is this: that the heavy part of food remains unabsorbed and will be excreted, whereas that which is fine and light becomes blood and creates flesh. The heavy food which does not become properly dried and otherwise disposed of is vaporized and soaks through the skin and causes ulceration.[78] Here probably reference is made to furunculosis and acne. In all this there is, as we see, a spark of truth which the human mind can never quite ignore. St. Methodius airs Galenic views universally held. These were part and parcel of the stock of civilization; it may generally be said that there was more medical knowledge in the laity than there is, relatively, now. Here is, for example, another illustrative view generally adhered to: "We men, who forever toil and labor, receive from our work the dew of the body wherefore we are not in need of superfluous cleansing; the women however have their monthly purification, for, as they do not work and take an excess of food they have no sufficient evaporation of the flesh."[79]

St. Methodius is also a philosopher. Upon him the influence of Neoplatonism worked strongly as it did, also, on Fathers like Synesius of Cyrene and St. Gregory of Nyssa.[80] There was also a Neoplatonic school of *iatrosophistai* upon which was based later the work of one as important as Oribasius.[81] It must be well understood, however, that the Latin world ceased to be swayed by Neoplatonism in the fourth century, although this continued to loom in Christian Greek and Oriental literature far into the sixth. After the Council of Chalcedon this literature began to rapidly decline (in 451) and assumed its restricted place. But the writings of Methodius, coming as they did in the early three hundreds, did not fail to impress themselves on the minds. This may be due to his broadness and large vision (we must not forget that this Saint was one of the first protagonists of Christian drama and is thus significant in early Byzantine literature[82]) a broadness which is so beautifully apparent in the famous work "Aglaophon seu de resurrectione." In this we find the great Christian physician Aglaophon holding forth in his clinic and discussing with his friends (with Methodius himself among others) the problem of immortality. Aglaophon in the dialogue gently and delicately repudiates the idea of corporeal resurrection. In this repudiation there is no crude materialism; there is a man's endeavor to raise his thoughts to eternity, to ascend beyond the world, as the human mind really is capable of doing every minute of its mature existence. Which of our bodies will rise from the dead? for we have many. There is complete, also material, immortality and there is none. We die while we live; the frame remains the same, but the parts are being constantly replaced. And Methodius arrives at a refined conception of immortality: a complex, perfect and new body will be resurrected and none of the crude and evidently perishable parts that we now see.[83] Pantheistic ideas loom in the background of this dialogue, whose Platonic beauty is unhappily marred by the incompleteness of the text.

The pastoral aims of the Fathers, acting as *consolatores afflictorum*, find here philosophical expression, so sweetly and bravely poured out two hundred years later by the troubled heart of Boethius. Others gave to it practical expression in the acute exigencies of life. Such was St. Cyprian, the comforter and true pastor of his flock in the terrible epidemic in Africa in 252, which according to his description might have been cholera as well as epidemic meningitis, for violent vomiting, diarrhea, congestion of the eyes and sensory disturbances are recorded in the meager symptomatology.[84] The sainted bishop represents aspects of pastoral medicine, a phase of patristic activity not to be overlooked. This form of activity found final outlet in the establishment of monastic hospitals. The idea of a concentrated ample life imbued by the ideal of mutual help sprang up toward the late fourth century; the monastic temper wishing to give something to others won over the hermit temper desirous essentially to receive. The monastery impels one to yield, to give, and this higher aspect and ambition were enforced upon human feebleness. Monastic congregations soon erected hospitals for the care of the cenobites, hospitals which of course cared more for the spiritual than the material welfare of their inmates, but cared nevertheless. St. Jerome's isolated *nosocomium* was founded in Bethlehem when St. Basil's system was already in full swing. His ζενοδοχεῖα grew not only in Caesarea but everywhere in the province of Cappadocia.[85] His *chorepiscopi* established such ecclesiastic institutions also in other provinces.[86] And when, in 410, Roman material civilization was, in the eyes of all, about to disappear, with Alaric's sack of the city, vigorous institutions such as these continued to grow in the Near East, foci of comfort to tell the sorrowers that all is not lost.

Through many a strange stage did medical information struggle forward. Nobody was able to form a clear picture of a systematic approach to the body of knowledge actually present. Superstition, results of observation, preconceived rationalistic ideas were thrown together. The first of these was extremely prevalent during the last centuries of antiquity. We laugh at St. Jerome's impossible pharmacy, but then what can be said of the astrological absurdities of a Firmicus Maternus[87] or the medical magic of a Serenus Samonicus, whose therapeutic procedure is to hang a chart inscribed with Abracadabra around the patient's neck?[88] These things were all the vague expressions of an age which did not see the world clearly and which lost organic contact with the continuity of learning. And, sure it is, that this continuity has to be preserved at all costs.

The first attempt of the Fathers to establish contact with antiquity in the realm of science attaches to Tertullian. Four centuries later, around the year 600, the last such attempt was made, not in Africa (whose literary fountains began to dry out) but in Spain. The last patristic synthesis is the work of St. Isidore, bishop of Seville. Born in 570 and educated in Spain, this man had no contact with the Greek world any more.[89] The cleavage between East and West was more or less complete. He knew no Greek.[90] His sources therefore are nearly exclusively Latin. His "Etymologiae" are based on pagan lay writers, as Apuleius, Solinus, Servius and Pliny, and on Christian Fathers, like Lactantius, St. Jerome,[91] St. Augustine and Tertullian.[92] The botanical part of his encyclopedia draws from Virgil, Columella, Pliny and from Dioscorides (who by that time certainly received manifold translations) whereas the fourth book is based largely upon the last Roman medical author of significance, Caelius Aurelianus.[93] This author is followed entirely in the chapter "De chronicis morbis," which a few examples may illustrate. Epilepsy is due to the exuberance of black bile, overflowing the brain[94]; paralysis is due to the effect of cold[95]; the causes of cachexia are intemperance of the patient and slow convalescence.[96] To the same source is traceable the description of cancer (although a specific case of breast cancer is taken from St. Augustine[97]), of icterus,[98] of lientery and of erysipelas.[99] From Lactantius comes the embryological information that the heart is formed in the embryo within four weeks, and that it is the first organ,[100] an information originally gathered by Aristotle.[101] Galenic physiology and pathology are completed; we again encounter the theory of the localization of emotions; the spleen containing joy and laughter, the liver, love, the heart, knowledge, whereas the seat of anger is "bile." A good description of gonorrhea is presented, regarding it of course as some kind of seminal emission.[102] Also nephritis is mentioned with meager symptomatology (the urine is heavier, darker and more viscous, for example[103]) and etiology, which in many cases is cantharides.[104] It seems probable that the aphrodisiac action of cantharides was frequently and damagingly resorted to. Although the examples could easily be cited a hundredfold, it must suffice to state that St. Isidore's chief authority on medicine is Caelius, and that of Caelius Galen, whom Isidore's age could no more read. His urine and pulse lore is essentially that of Graeco-Roman medicine.

St. Isidore is also the first among Christian writers who gives a brief sketch of the history of medicine,[105] if occasional, worthless references to Apollo, Asclepios and Hippocrates are not counted. Amongst the ancients the only one exhaustively treating the subject was Soranus of Ephesus. St. Isidore of course is very meager in his information, nevertheless the important Hellenistic Roman schools are well characterized in their habits and tenets.[106] He has a very great respect for medicine, and conceives of the necessity for a complete and thorough integration.[107] The liberal arts (we are already at the entrance of the Middle Ages) are single, but medicine contains each and all. *Illae singulares continent causas, ista vero omnium.* The physician had to know grammar, to be able to understand and expound what he read; dialectic, to be able to investigate and cure the causes of diseases with reason (*ratione adhibita);* rhetorics, to establish the truth of proofs; arithmetic, to recognize the periods of the day; geometry, to know the qualities of regions and places; music for its soothing curative powers, and astronomy, for the mutation of times has an influence upon our bodies.[108] Therefore "medicine is second philosophy. Both sciences cover the whole man. One of them heals the soul, the other, however, the body."[109]

St. Isidore's influence was enormous and lasting. Two centuries later the father of German science, as he is called, Rabanus Maurus, abbot of Fulda, amply draws on him in writing his "De Universo,"[110] and another two centuries later the patrimony is handed down to Hugo of St. Victor, who stood at the cradle of the University of Paris.

Here then lies the importance of patristic literature. Compilation? Yes. But without that compilation a great deal of the classical literature would have been irretrievably lost. Not sufficient attention has been yet given to the translating activities of the late Fathers. In the stormy sixth century, when the Academy and the schools in Greece, hitherto adhering to classical traditions, close their doors, in Italy Boethius[111] translates Aristotle and contemplates translating Plato; Cassiodorus Senator,[112] Theodoric's great minister, translates, and causes to be translated, Hippocrates. In his famous Vivarium, Christian medicine and science, dying in the Didascalia of Alexandria and Nisibis, were safely continued, as in a snug harbor. Near Squillace Roman culture was saved. The "Aphorisms," "Diets," "Airs, Waters and Places" were all translated by anonymous hands around the year 500.[113] Cassiodorus also recommends the study and translation of Galen to his monks.[114] A terrible pity it is that these ancient manuscripts are no longer extant.[115] We must consider that if not for this, there would not have been any medical literature in the West. The "Physiologus,"[116] a strange collection of advices and norms, possibly of Syrian or of Greek origin (even St. Epiphanius is mentioned as author),[117] would have remained the chief authority in matters medical, together with symbolic bestiaries, lapidaries, pseudo-Plinian compilations[118] and the like, to which the popular fancy took in those days.

Patristic contribution was then, first, intellectual, a synthesis and a more or less successful one. This synthesis was the only learning adhered to in the West, until the Carolingian Renaissance. From St. Isidore until the bloom of Alcuin's pupils nothing occurs that would make these compilations superfluous, compilations which were soon translated into the vernaculars. Without them, who can tell, maybe the laity would never have become acquainted with antiquity. Thus for the Latin West, patristic medicine is the foundation of monastic medicine, as in turn monastic medicine is the fountain from which the great universities drink at their birth. In the Greek East, patristic learning flows into the great stream of Byzantine civilization.

In the emotional field, patristic influence was the foundation of a new, an altruistic medical concept.[119] The Middle Ages were thus confronted with a great intellectual and emotional heritage. In their beginning centuries a new medical *Weltanschauung* found crystallization.

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15. Tertullian. De anima, c. 16, 17: Teneritas substantiae illius, qua speculum ex lumine efficitur, prout icta seu mota est, ita et imaginem vibrans evertit lineam recti.
16. *Ibid.*, c. 9. On hallucinations.
17. *Ibid.*, 27: Non enim et sentire intelligere est et intelligere sentire est?
18. *Ibid.*, 17: Non enim sensum mentiri, sed opinionem. Also cc. 5, 6, 7.
19. This was very early recognized. St. Jerome, Ep. 70, 5: Quid Tertulliano eruditius, quid acutius? Apologeticus ejus et contra Gentes libri cunctam saeculi continent disciplinam.
20. Tertullian. *Op. cit.*, 15 *et al. loc.*
21. *Ibid.*, c. 15: Per totum corpus ventilari secundum Muschionem.
22. *Ibid.* See also Harnack, A. Medizinisches aus der ältesten Kirchengeschichte. p. 83. The Empedoclean: *αἶμα γὰρ ἀνθρώποις περικαρδιόν ἐστι νόημα.*
23. Ille medicus aut lanius, qui sexcentos homines exsecuit, ut naturam scrutaretur, qui hominem odit, ut nosset, nescio an omnia ejus liquido explorarit, ipsa morte mutante quae vixerant, et morte non simplici, sed ipsa inter artificia exsectionis.
    See also Neuburger, M. Geschichte der Medizin. Stuttgart, 1911, II, I, 75*ff*.
24. Tertullian. *Op. cit.*, c. 25: Denique et mortui eduntur, quomodo, nisi et vivi? qui autem et mortui, nisi qui prius vivi? atquin et in ipso adhuc utero infans trucidatur necessaria crudelitate, cum in exitu obliquatus denegat partum matricida ni moriturus. itaque est inter arma medicorum et organon, ex quo prius patescere secreta coguntur tortili temperamento, cum anulocultro, quo intus membra caeduntur anxio arbitrio, cum hebete unco, quo totum facinus extrahitur violento puerperio. est etiam aeneum spiculum, quo iugulatio ipsa dirigitur caeco latrocinio: *ἐμβρυοσφάκτην* appellant de infanticidii officio, utique viventis infantis peremptorium. hoc et Hippocrates habuit et Asclepiades et Erasistratus et maiorum quoque prosector Herophilus et mitior ipse Soranus, certi animal esse conceptum, atque ita miserti infelicissimae huiusmodi infantiae, ut prius occidatur, ne viva lanietur.
25. *Ibid.*, c. 18, 20, 23.
26. Hergenröther, J. Card. Handbuch der allgemeinen Kirchengeschichte. Freiburg, 1884, I, p. 244.
27. d'Irsay, S. *Op. cit.*

28. Hergenröther, J. *Op. cit.*, i, 629.

29. de Labriolle, P. *Op. cit.*, pp. 333*ff*.

Grutzmacher. Hieronymus. 1901–1908.

Cavallera. St. Jerome, sa vie et ses oeuvres. Paris-Louvain, 1922.

30. He refers to St. Gregory as "praeceptor meus." Comm. in Is. vi, i (Migne, Patr. Lat. xxxiv, col. 93). He was in Constantinople probably between 379 and 382. On his participation in the anti-Origenist dispute see Cavallera. *Op. cit.*, p. 240*ff*.

31. Cavallera. *Op. cit.* i, 22.

32. Pease, A. S. Medical allusions in the works of St. Jerome. In Harvard Studies in Classical Philology, xxv, 73, Cambridge, 1914.

Harendza. De oratorio genere dicendi quo Hieronymus in epistulis usus sit. Diss. Breslau, 1905. (pp. 29, 31, 36, etc.)

33. Hieronymus. Vita S. Hilarionis, 14.

Tract. in Marc. i; adv. Pelag. iii, 11 et al. loc.; Comm. in Abacuc. i; in Matt. i, 45; in Eph. iii, etc.

34. Hieronymus. Adv. Jov. ii, 12: in Eph. iii, etc.

35. Hieronymus. Ep. 10, 3, 2; 117, 2, 1; adv. Ruf. ii, 34; iii, 8; adv. Jov. i, 4.

36. Hieronymus. In Job 3 (Migne, Patr. Lat. xxvi, col. 626.)

37. Hieronymus. Tract. in Marc. i: Novit diligenter venas tangere et morborum arcana scrutari.

38. Hieronymus. Tract. in Ps. 119: Si quando in corpore vulnus est, et in ipso vulnere iam putridae carnes sunt, et cancer est, et fuerit pus intrinsecus: nisi apertum fuerit, non egreditur pus. Et si egressum fuerit pus, nisi cauterium fuerit, rursum renascitur pus.

39. Hieronymus. Adv. Jov. ii, 6: Et (quod forsitan legendum mirum sit) hominis fimus quantis curationibus proficiat, Galenus ἐν ἁπλοῖς docet. *Ibid.*: Stercus canum putrida curat vulnera.

Galen (simpl. med. x, 13, Kühn, xii, 270): τῆς κυνείας κόπρου πάνυ πολλὴν ἔχω πεῖραν ὡς θαυμαστοῦ φαρμάκου κτλ.

40. Hieronymus. Adv. Jov. ii, 12. Simplest food advocated.

41. Hieronymus. Comm. in Sophon. See Pease, *Loc. cit.*

42. Hieronymus. In Eph. prol.: . . . nec ad instar imperiti medici uno collyrio omnium oculos vult curare.

43. Hieronymus. Adv. Jov. ii, 7: Atticotos (to this designation, vid. Ammianus Marcellinus xxvi, 4), gentem Britannicam, humanis vesci carnibus: et cum per silvas porcorum greges et armentorum pecudumque reperiant, postorum nates et feminarum et papillas solere abscindere, et has solas ciborum delicias arbitrari . . . Scotorum natio uxores proprias non habet et quasi Platonis politiam legerit, et Catonis sectetur exemplum, nulla apud eos conjux propria est, sed ut cuique libitum fuerit pecudum more lasciviunt.

44. Eusebius. Praep. Evang., i, 4, 7*ff*.

45. Hieronymus. Adv. Jov. ii, 7.

46. περὶ ἀποχῆς ἐμψύχων.

47. Hieronymus. Adv. Jov. ii, 7: Esus carnium et potus vini, ventrisque saturitas, seminarium libidinis est. *Et al. loc*.

48. Hieronymus. Tract. in Is.

49. Hieronymus. Adv. Jov. ii, 11: Quis aegrotat non aliter recipit sanitatem nisi tenui cibo et castigato victu quae λεπτὴ δίαιτα dicitur . . . This from Porph. de abst. i, 52. See Lübeck, E. Hieronymus quos noverit scriptores et ex quibus hauserit, Leipzig, 1872, p. 69.

50. Cavallera, F. *Op. cit.*, i, 43; ii, 88.

Hieronymus. De Viris inlustr. 75 *et al. loc.* On St. Jerome's sources see further: Mommsen. Gesamm. Schriften. vii, 606; Bauer, *Sitzungsber. d. k. Ak. d. Wiss.* Wien, 1909, cxlii, 3. Abt. 42, i.

51. Hieronymus. Ep. 52, 15, 2; 125, 16; Adv. Jov. ii, 11. See Lubeck, *Op. cit.* p. 99*ff*.

52. See ref. 39. Hieronymus. Adv. Jov. ii, 11; Ep. ad. August. 102, 2, etc.

53. Hieronymus. Comm. in Amos, iii, 7: . . . transeamus ad anagogen, de Xenocrate qui scribit super lapidum gemmarumque naturis pauca verba ponentes. On Xenocrates, regn. Tiberius, see Zoeckler. Hieronymus. Gotha, 1865, p. 328.

54. Hieronymus. Adv. Jov., ii, 6.

55. Hieronymus. Ep. ad Ctesiphont. 133, 3 quotes Lucr. i, 936. See Lübeck, *Op. cit.*

56. Hieronymus. Adv. Jov., ii, 6: . . . legat qui volt Aristotelem et Theophrastum prosa, Marcellum Sidetem . . . hexametris versibus disserentes et ceteros tam physicos quam medicos, qui nullam lapidem, nullum animal, tam reptile quam volatile et natatile non ad suae artis usum referunt. On Marcellus see v. Christ, w. Gesch. d. griech. Litt. 1924, ii, 2, p. 678.

57. Roscher, W. H. Sächs. Ges. d. Wiss. *Abh. d. philol.-hist. Kl.*, 1896, xvii, H. 3. See Hecker, Epidemics of the Middle Ages. London, 1846.

58. See ref. 56. Eusebius Praep. Evang. iv, i, 13: μὴν καῖ ὑγιείας εἶναι τινὰ ποιητικὰ, ἰατρικῆς οὐκ ἄπωθεν ἐπιστήμης, τὰ δὲ νοσοποιὰ τυγχάνειν καὶ δηλητήρια.

59. Hieronymus. Adv. Pelagianos, iii, 4: Da mihi

hominem qui non esuriat, non sitiat, neque algeat, non doleat, non febricitat, non torminibus et urinae difficultatibus torqueatur. (Migne, Patr. Lat., xxiii, col. 600.)

60. Hieronymus. Comm. in Ezech. 40, 5 (Migne, Patr. Lat., xxv, col. 375).
    Cavallera, F. *Op. cit.*, i, 15.
61. Aen. vi, 268–281.
62. Hieronymus. Adv. Jov., i, 47: . . . si bona fuerit et suavis uxor (quae tamen rara avis est) cum parturiente gemimus, cum periclitante torqueamur.
63. St. Augustine. Sermo 249, 4: the soul . . . omnibus simul adest membris, ut vivent.
64. St. Augustine. De genesi ad litteram, vii, 18 (Migne, Patr. Lat., xxxiv, 364): Tres ventriculi cerebri demonstrantur: unus anterior ad faciem, a quo sensus omnis, alter posterior ad cervicem, a quo sensus omnis; tertius inter utrumque in quo memoriam vigere demonstrant, ne cum quod sequitur motus, non connectat homo quod faciendum est, si feurit quod fecit oblitus.
65. St. Augustine. De anima ii, 4 (Migne, Patr. Lat., xliv, 573): Pulmones quippe anima, cujus motu moventur etiam cetera corporis membra, ad hunc aerium spiritum ducendum atque reddendum, sicut folles movet.
66. St. Augustine. Sermo 243, 6–7 (Migne, Patr. Lat., xxxviii, 1146).
67. St. Augustine. Sermo 24, 5 (Migne, Patr. Lat., xxxviii, 165).
68. St. Augustine. De nuptiis et concupiscentia, ii, 12 (Migne, Patr. Lat., xliv, col. 450).
69. de Labriolle, P. *Op. cit.*, p. 263*ff*.
    Thamin. Saint Ambroise et la morale chrétienne au ive siécle. Paris, 1895.
70. St. Ambrose. Hexaem., vi, 9 (Migne, Patr. Lat. xiv, col. 264*ff*.): Venarum pulsus vel infirmitati vel salutis est.
71. *Ibid.*, col. 271.
72. *Ibid.*, col. 268: cerebrum . . . omnes suscipit sensus . . . unde omnes nervi.
73. De anima and Vita S. Gregorii Thaum., 12.
74. See ed. Bonwetsch, Berlin, 1917.
75. *Ibid.*, De resurr. i, 9; p. 230 sqq. ἐκ πυρὸς μὲν ἀὴρ . . . πάλιν δ'ἐξ ἀέρος ὕδωρ . . . κτλ.
76. St. Methodius. Aglaophon seu de resurrectione. Ed. Bonwetsch, Leipzig, 1917, p. 219*ff*. Main mss: Slavic, Tolstoi, ii, 56 (Petrograd), Mosc. Synod. 110; Greek: Coislin. 294, (xi–xii cent.) See Bonwetsch. *Ibid.*, p. xxxiv*ff*.
77. *Ibid.*, p. 232.
78. *Ibid.*, p. 230*ff*.
79. St. Methodius. De resurr., ii, 13, 1–4.
80. Hergenröther, J. *Op. cit.*, ii, 630.
81. von Christ, W. *Op. cit.*, 1924, xx, ii, 2, p. 1095–96.
82. Krumbacher, K. Gesch. d byzantin. Litteratur. München, 1897, p. 644 *et al. loc.*
83. St. Methodius. ed. Bonwetsch, p. 233*ff*.
84. St. Cyprian. De mortalitate, c. 14: Hoc quod nunc corporis vires solutus in flexum venter eviscerat, quod in faucium vulnera conceptus medullitus ignis exaestuat, quod oculi vi sanguinis inardescunt, quod quorumdam vel pedes vel aliquae membrorum partes contagio morbidae putredinis amputantur, quod per iacturas et damna corporum prorumpente languore vel debilitatur incessus vel auditus obstruitur vel caecatur aspectus, ad documentum proficit fidei. See Benson, E. W. Cyprian. N. Y., 1897, p. 241*ff*.
85. Clarke, W. K. L. St. Basil the Great. Cambridge, 1913, p. 59*ff*.
86. St. Basil. Ep. 94 *et al. loc.* See Clarke, W. K. L. *Op. cit.*
87. Thorndike, L. History of Magic, etc. N. Y., 1923, i, p. 536. *Idem.* Class. Philol. viii, 4, 415, 1913.
    Boll, F. In Pauly-Wissowa, Real-Enz. etc., ed. Kroll and Skutsch, Leipzig, 1897, 1913.
88. Teuffel, Gesch. d. röm. Litt. Leipzig, 1913, p. 140.
    Mackail, J. W. Latin Literature. N. Y., 1898, p. 262:

Inscribis chartae quod dicitur Abracadabra,
Saepius et subter repetis, sed detrahe summam,
Et magis atque magis desint elementa figuri,
Singula quae semper rapies et cetera figes
Donec in angustum redigatur litera conum:
His lino nexis collum redimire memento.

89. Manitius, M. Gesch. d. lat. Litt. d. Mittelalters. München, 1911, i, p. 52*ff*.
    Sudhoff, K. Die Verse Isidors von Sevilla auf dem Schrank der medizinischen Werke seiner Bibliothek: *Mitt. z. d. Gesch. d. Med.*, xv, 1916, 200.
    Taylor, H. O. The Mediaeval Mind. N. Y., 1919, i, 104.
90. Manitius, M. *Op. cit.*, p. 65. See Etym. 3, 21, 6: fistula autem dicta quod vocem emittat, nam graece φως vox, stola missa appellatur.
91. His Aristotle comes from Boethius, his Galen from St. Jerome.
92. Klussmann, M. Excerpta Tertulliana in Isidori Hisp. Etymologiis. Hamburg, 1892.
93. Manitius, M. *Op. cit.*, p. 63.
94. St. Isidore. Etym., 4, 7, 5 (Migne, Patr. Lat. lxxxii, col. 187): . . . fit autem ex melancholico humore quoties exuberavit et ad cerebrum conversus fuerit.

95. *Ibid.*, iv, 7, 18.
96. *Ibid.*, iv, 7, 26: . . . post aegritudinem tarda resumptio.
97. St. Augustine. De civ. Dei, xxii, 8, 3: . . . habebat in mamilla cancrum, rem (sicut medici dicunt) nullis medicamentis sanabilem. See Galen. Ther. ad Glauc. 2, 10; Hippocrates. Aph. 6, 38.
On cancer, iv, 8, 14: Aut ergo praecidi solet a corpore membrum ubi nascitur, ut aliquanto diutius vivat, tamen inde mortem quamlibet tardius affuturam.
98. St. Isidore. Etym. iv, 8, 13.
99. *Ibid.*, iv, 8, 4.
100. Cor primum nascentibus formari in utero tradunt, deinde cerebrum, sicut tardissime oculos. From De opif. xii.
101. Aristotle. De part. anim. 3, 4: *ἀλλὰ ἔναιμος πρώτη γινομένη τῶν μορίων ἁπάντων.*
102. From Caelius, ac. 4: Seminis lapsus, quem Graeci gonorrhoeam vocant.
103. St. Isidore, Etym. iv, 7, 24. *Cf.* Caelius, iv.
104. See Caelius: . . . urinalia frequentata medicamina, aut venena, quae specialiter ipsas afficiant partes, ut sunt ex cantharidis confecta.
105. St. Isidore. Etym. iv, 3.
106. St. Isidore. Etym. iv, 4: De tribus haeresibus medicorum . . . empirici experientiam solam sectantur . . . logici experientiae rationem adjungunt, methodici nec elementorum rationem observant, nec tempora, nec aetates, nec causas, sed solas morborum substantias.
107. St. Isidore. Etym. iv, 10, 2: oportet enim medicum et praeterita agnoscere et praesentia scire et futura praevidere.
108. St. Isidore. Etym. iv, 13.
109. Hinc est quod medicina secunda philosophia dicitur. Utraque enim disciplina totum sibi hominem vindicat. Nam sicut per illam anima, ita per hanc corpus curatur.
110. Rabanus Maurus. De Univ. xviii. (Migne, (Patr. Lat., cxi, col. 500*ff*).
111. Manitius, M. *Op. cit.*, p. 22*ff*.
112. *Ibid.*, p. 38*ff*.
113. Schanz, M. Gesch. d. röm. Litt., München, 1920, iv, 2, p. 294*ff*.
Ilberg, J. *Philol.*, 1893, n.f. 6, lii, 426.
114. Schanz, M. *Loc. cit.*
Cassiodorus. Inst. div. litt. 31 (Migne, Patr. Lat., lxx, 1146).
115. Diels, Die Hss. d. antiken Ärzte. *Abh. d. Berl. Akad. Wiss., phil.-hist. Kl.*, 1905, Abh. 3; 1906, Abh. 1; 1907, Abh. 2.
Costomiris, A. G. Revue des études grecques. 1889, ii. There are fragments of these mss, as Ambros. G 108, Paris. 7027, Sangallensis 762, Casinensis 97, Augiens. (Karlsruhe) 120; on their evaluation see Schanz, M. *Loc. cit.*
116. Thorndike, L. *Op. cit.*, i, 497*ff*.
Ahrens, K. Das Buch der Naturgegenstände. 1892 (Syriac); *idem.*, Zur Gesch. d. Physiologus. 1885.
Peters, E. Der griech. Physiologus u. seine orientalischen Übersetzungen, Berlin, 1898.
117. Cod. Vindob. Med. 29: *τοῦ ἁγίου 'Επιφανὶου ἐπισκόπου Κύπρου περὶ τῆς λέξεως πάντων τῶν ζώων φυσιολόγος.*
118. Teuffel, W. S. *Op. cit.*, iii, 238.
Manitius, M. *Op. cit.*, i, 18.
119. As is concisely put by St. Basil: *ἔστι μὲν καὶ πᾶσιν τοῖς τὴν ἰατρικὴν μετιοῦσι φιλανθρωπία τὸ ἐπιτήδευμα.*

CONSUMPTION (TUBERCULOSIS) IN CLASSICAL ANTIQUITY*

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Preparatory Note

INASMUCH as this work required a historical basis for its treatment, the chronological arrangement was deemed imperative. The word "tuberculosis" is several times employed from the layman's viewpoint, viz., as a synonym for "consumption"; it carries with it no formal scientific connotation, for it would be manifestly impossible to demonstrate the tubercle bacillus in a work of this kind. Many physicians use the word loosely in a similar manner.

All references to Hippocrates accord with the edition of Littré only; those to Galen will be found in the work of Kühn.

The Greek and Latin texts of medical authors have been omitted at the discretion of the writer for obvious reasons; the cost of paper and printing is too large an item to be disregarded by the average pedagogue, and furthermore the original is easily accessible to anyone who may be interested.

I wish to express a deep debt of gratitude to Professors Kelsey and Sanders of the University of Michigan, who not only by their scholarly example and attainments but by their marked understanding and appreciation of the human element in learning have ever been of the greatest personal inspiration to me. Their kindly encouragement recalls the famous dictum of Goethe: "Das eigentliche Studium der Menschheit ist der Mensch."

I desire, too, to record my thanks to my brother, H. A. Meinecke, M.D., of Detroit, who gave me many valuable suggestions and whom I often consulted to verify my own conclusions. Of necessity such a work as this must at times have recourse to probabilities, for conclusive material is not in every case available.

I. Consumption in Remote Antiquity

Ca. 3000 B.C. The remote antiquity of consumption or tuberculosis does not fall within the immediate scope of this investigation; however, it should be noted that the Greek and the Roman phases of the disease can be linked with older civilizations and that the predynastic mummies of the Egyptians furnish the earliest proof of the existence of tuberculosis. A tuberculous disease of the spine with positive evidence of psoas abscess has been demonstrated in mummies dating as far back as the dawn of Egyptian history.[1]

Ca. 2500 B.C. Further evidence is available in the Vedic Hymns. In the Rig Veda the cure of Yakshma, phthisis or consumption is the subject of a hymn: "I drive thy affliction away from thy eyes, thy nose, thy ears, thy chin, head, brain and tongue. I drive thy affliction from the tendons of thy neck and neck, breast-bone and spine, shoulders and arms. I drive thy affliction from vitals, rectum, heart, kidneys, liver, spleen. I drive thy affliction away from thy thighs, knee-caps, heels and from thy feet, thy hips, stomach, groins; I drive the malady away from thy excretions, thy hair, thy nails, from the whole of thee. I drive away thy malady from all members, each hair, each joint, from the whole of thee."[2] Williams[3] defines the word Yakshma and Yakshman, translated in the above passage by "affliction" and "malady," as a "disease, probably of a consumptive nature, pulmonary consumption, consumption, decline"; while Griffith specifies that in this hymn:

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"the deity or subject is the cure of Yakshma or phthisis or consumption."[4] In the Atharva Veda a reference occurs to a charm which cures consumption, and the plant kushtha is mentioned as a cure for a kind of consumption.[5] Scrofula is also alluded to.[6]

Some commentators of the Bible have seen consumption in several passages, and, although the descriptions are in general too meager to admit of a definite demonstration, such a conclusion is not entirely fanciful. Atrophy of the bones and flesh is often referred to[7]; the figures of speech uttered by Moses in Leviticus[8] and in Deuteronomy[9] may well have been suggested by this malady; Daniel[10] and Isaiah[11] may have had it in mind, and certainly the plague described in Zechariah[12] has reference to an intense emaciation, consumption or atrophy. The Hebrew word is from a root meaning to "waste away," a condition which is often the result of severe internal abscess. This may very well have been "The Great White Plague," and it may generally be assumed that the consumption of the Bible was the pulmonary phthisis of the western world. That the disease was well known in the Apostolic period can be conjectured from the careful description of Aretaeus, the Cappadocian, who, if his surname is not misleading, must have had an opportunity to associate both with Jews and Christians at Tarsus and other Asiatic centers.

Tuberculosis, then, seems to be a disease which has an unbroken sequence traceable to a civilization as early as 3000 B.C., but we may safely conclude that it existed and was known centuries before that time. In view of the historical record of the contact of these several civilizations it would hardly require a violent stretch of the imagination to believe that the Greeks took consumption from the Egyptians and that the former in turn passed it on to the Romans. We are the unfortunate recipients of this disease from these earlier peoples, and it would seem that the German *Volkskrankheit* is an apt term to designate tuberculosis, for it has been found in all ages, in all climates, and in all countries where human beings have congregated.

II. REFERENCES TO CONSUMPTION IN GREEK WRITINGS

The many positive references to consumption found in Greek and Roman writers, both medical and non-medical, establish beyond a doubt their full acquaintance with this malady. They manifest a keen observation of the symptoms, causes, development, and dreaded results of the disease, and, although we meet with no scientific explanation approaching the modern theory of tuberculosis, it is within the bounds of reason to suppose that some of the ancient physicians may have had at least a visual acquaintance with the small rounded nodules produced by the bacillus of tuberculosis, as subsequent references will suggest. That the ancients recognized the existence of the tubercle will appear as a reasonable inference; it will, however, appear as equally true that they did not associate the existence of true phthisis and the tubercle as belonging to the same disease.

The earliest Greek reference to consumption occurs in Homer[13]: "Nor did any disease come upon me, such as usually by grievous consumption takes the soul from the body." Hesychius defines τηκεδών as τῆξις or φθίσις; Pollux,[14] it would seem, places τηκεδών in the same category with φθίσις, and Kühn's[15] note is instructive; Suidas likewise gives the following citation: καί νοσεῖ νόσῳ μακρᾷ καί τηκεδών αὐὴν διεδέξατο. In another passage Homer refers to a father "who lies in sickness . . . a long while wasting away,"[16] and he also may well have been a consumptive, though such a conclusion is not absolutely certain. Hippocrates, however, uses τήκω several times in connection with consumption,[17] and especially noteworthy in his use of τήχονται with reference to consumption of the spinal marrow.[18] Aristotle[19] also has an example.

Fl. 468 B.C. Though the expression is too brief to admit of a solid interpretation, it is at least possible that Sophocles[20] had consumption in mind when he said: "smitten not by wasting sickness," for Hippocrates often designates this disease by φθινάς, with or without νόσος.[21]

Ca. First Half of Fifth Century B.C. Euryphon, a celebrated physician of Cnidos in Asia Minor and an older contemporary of Hippocrates, treated consumptives with the milk of she-asses and mothers, and likewise employed actual cautery.[22] A scene described by Plato may possibly refer to him, and in this passage he is ridiculed for treating the consumptive Cinesias with cautery.[23] Furthermore, if he be the author of the "Cnidiae Sententiae"[24] in the Corpus Hippocraticum, his knowledge of consumption was already well defined in the pathology of the disease. In the "De Affectionibus Internis" of this collection appears a lucid discussion of three divisions of phthisis[25]: first, pulmonary infection caused by a flow of putrid phlegm from the head to the lungs, causing death usually within a year's time; second, that caused by overexertion, in which the patient suffers as in the first case, except that the sputum is of a heavier consistency, the cough more aggravated in the case of older patients, the pain in the lungs more marked, and the patient feels as if a heavy weight were resting on his chest; pain also appears in the back, the skin becomes transparent, and at the slightest exertion he gasps for breath. Those afflicted with this kind of consumption live longer, but eventually die within a period of three years. The symptoms of the third form of phthisis are recognized by blood and bile in the spine, a watery phlegm and bile in the veins; the patient becomes emaciated, his appearance is black and swollen, the parts below the eyes become pale, he experiences difficulty in breathing and in coughing as well, until a temporary relief is secured by vomiting up bile and phlegm. This disease is of longer duration than either of the former, but the patient usually dies within nine years.

A system of therapeutics had already been worked out as early as Euryphon, and in his treatment the primary purpose seems to have been to build up and replenish the system. The milk of wolves, asses, cows and goats is prescribed, as well as proper purgatives, mild exercise in the open, vapor baths, hot water baths, vomiting, potions prepared from various herbs, wine with honey, certain kinds of meat, and above all quiet and rest.

Fl. 443 B.C. Herodotus knew of consumption and mentions it clearly in the following passage: "For as he was riding, a dog ran beneath the feet of the horse; and the horse, not seeing it, was frightened, reared up and threw Pharnuches, and, after he had fallen, he spit blood, and the disease turned into consumption."[26]

Fl. 441 B.C. Euripides says of Alcestis: "For she fades and wastes away by disease," and "Cry out, Oh groan, Oh land of Pheres, for the noblest woman, wasting away with sickness."[27] The poet here certainly emphasizes the gradual decline of the body which would happen from a slow, lingering disease such as tuberculosis, and there is no special obstacle in the Greek text to neutralize such an interpretation. It is more likely, however, that he may not have had any definite disease in mind, but used the expression only metaphorically.

Fl. 430 B.C. Democritus in one of his lost books treated the subject, "Concerning Those Who are Attacked with a Cough as a Result of Sickness,"[28] a title which may indicate that tuberculosis was a common disease and that pre-Hippocratic writers may have had a fairly good knowledge of certain aspects of consumption. The Greek title may be interpreted as referring to the morbid coughing of consumption, but it more probably suggests an insight into a secondary tubercular condition resultant from some other primary disease.

460–357 B.C. Hippocrates describes consumption so often and so fully that we are forced to the conclusion that it must have been very prevalent already in his day. He has given us a truly excellent description of phthisis in the first and second books

"De Morbis,"[29] from which it appears that the "Father of Medicine" noticed a frequent association of tuberculosis with other complications of pneumonic diseases, and that a basal lobar pneumonia with empyema may become tuberculous. No doubt cases of pleurisy came under his observation of which the greater number were in reality tuberculous; that a large proportion of these subsequently suffer from consumption is well known to modern physicians. It is not strange, therefore, that Hippocrates discusses consumption in connection with other respiratory diseases. The following passage is typical and presents a variety of interesting and instructive material.

> And from the following causes especially does empyema arise in the lungs: if a person, who is afflicted with inflammation of the lungs, does not relieve himself during the critical days, but retains the sputum and phlegm in his lungs, in such a one there appears empyema. If he receives attention immediately, he usually escapes; but if he is neglected the lung becomes infected and ulcerated from the putrid substance that establishes itself within; and it can neither take in any nourishment worth mentioning nor relieve itself at all of any part of the substance within, but the patient becomes subject to choking spells, his breathing becomes impaired and is accompanied by a wheezing sound, and thereafter he breathes from the upper part of his chest; but finally by reason of the phlegm the respiratory passage is closed up and the patient dies.
>
> Empyema also arises whenever phlegm flows down from the head to the lungs of the patient. At first this downward flow usually escapes notice and causes a slight cough; the sputum is slightly more bitter than usual, and from time to time there appears a moderate fever. In due time, however, the lungs become irritated; they ulcerate within in consequence of the pituita which sticks to them and becomes purulent, and causes a feeling of heaviness in the chest, a violent pain in the front and in the back; the body becomes hotter as the result of higher temperature, and consequently the lungs draw to themselves phlegm from the entire body; this, becoming purulent and of a thick consistency, the patient vomits up. In proportion as the time advances, the more purulent is the quality of the matter which the patient spits up, the temperature runs up higher, the cough becomes more frequent and violent, and a lack of appetite harasses the sick man. Finally, however, a digestive disturbance takes place in the lower bowel, a condition which appears as the result of the phlegm that goes down from the head. When it comes to this, the patient dies, as stated above, either because the lungs are purulent and decayed or because the lower part of the belly has disappeared.

Hippocrates then continues by describing a second kind of phthisis which is caused by the bursting of a blood vessel; the blood is transformed into purulent matter, and the result is pulmonary ulceration. Finally a third kind of consumption may appear as the result of an acute pleuritis or a chronic localization of phlegm and blood in the pleura, a condition which may likewise cause pulmonary suppuration. In all these cases the disease is curable if treated betimes.

In the second book "De Morbis"[30] the phthisical habit and general physical appearance of a consumptive is accurately described. The sputum is thick, yellowish in color, fairly sweet to the taste; gnashing of teeth, pain in the breast and back, persistent crepitations, dryness in the throat, a reddish hue in the hollows of the eyes, dullness and hoarseness of voice, swelling of feet, bent finger-nails, emaciation, redness of cheeks are all mentioned as concomitant physical characteristics; as are likewise hemoptysis, cough, and expectoration of purulent matter that is excessively moist and of the appearance of hailstones, emitting an obnoxious odor when placed on live coals, languor, physical debility, loss of hair, disorder of the bowels. The latter condition was regarded as especially dangerous. The test which Hippocrates applied to the sputa has held its ground until modern times and the age at which consumption is most prevalent was the same in Hippocratic times as in ours, namely from eighteen to thirty-five years.[31] Empyema prolonged beyond a period of forty days leads to consumption.[32]

Of all diseases that raged on the island of Thasos none reaped such a bountiful harvest as consumption,[33] for "of all maladies it was the most virulent and most difficult, and exacted the most deaths." Hippocrates then proceeds to enumerate the symptoms already referred to, and adds others, such as frequent chills, continuous fever, excessive perspiration, inability of the patient to keep warm, both constipation and diarrhea, excessive and abundant urination, and marked emaciation. Frequent coughing spells and abundant expectoration accompanied the disease, but violent pain was generally absent. The constant lack of appetite of the patient was very noticeable, and for long intervals not the slightest desire for drink was manifested. The loss of hair, whitish skin, lentil-colored (pale) complexion, reddish color around the eyes, shoulder blades like the wings of a bird, conclude the portrayal of this picture.

Though pulmonary consumption receives by far the greater attention, Hippocrates often mentions scrofula, or the strumous disease,[34] which in modern medicine is classified as a tuberculous disease because it is nearly always due to the growth of the tubercle bacillus in the lymphatic glands.[35] The ancients, to be sure, did not know this, but it is well to keep the antiquity of this malady in mind in subsequent evaluations. Tuberculosis of the vertebrae[36] was known to our author, who several times discusses spine disease and consumption of the spinal marrow. Spinal curvature is also described with wonderful insight into the etiology and general course of such an affliction, and in this connection Hippocrates states that such persons usually have "hard and unconcocted tubercles in the lungs"; further on he says that "most of such cases are associated with abscesses or tubercles within the spine . . . but these will be discussed among the chronic pulmonary diseases." Modern medical authorities are generally agreed that nearly all spinal curvatures are due to tuberculosis,[37] and the little Greek hunchback without doubt was made so by the same disease. Consumption of the hip,[38] of the larynx,[39] and of the kidneys[40] is also referred to. In renal tuberculosis an abscess is formed near the spine as soon as the kidney becomes filled with pus, and under such conditions operative measures are suggested. A successful operation may save the patient, but "this disease is dangerous and may accordingly lapse into renal consumption." Though not specifically tabulated because the ancients did not so classify it, tuberculous osteomyelitis of modern medicine is probably the same disease as the consumption of the vertebrae and hip-joint of Hippocrates. Enlargement of the hypochondriac region is several times mentioned as being an unfavorable symptom in the case of consumptives[41]; though this enlargement may refer to several different organs according as it appears on the right or the left side, yet its association with consumptives is significant.[42] It is very probable that Hippocrates had noticed this condition in advanced stages of a systemic tuberculosis, and so regarded it as a danger signal to consumptives. Modern physicians are inclined to diagnose an enlargement on the left side as due to a morbid condition of the spleen.[43]

The therapeutics of consumption may in a general way be regarded as similar to those in use at the present time, namely the free use of milk, of either asses, mares, goats or cows, especially in the absence of much fever and headache, limited quantities of fish, meat and fats, moderate walking exercise, avoidance of great changes of temperature and colds, the use of various palliatives, herbs, and other compounds.[44]

Hippocrates believed in the hereditary transmission of tuberculosis, for he says "consumptives beget consumptives"[45]; this observation verifies our opinion of the keen insight of the great Greek physician, who has often been denied this very attribute which he manifests so clearly. The question of hereditary transmission is one on which there appears the widest divergence of opinion, but recent studies by Warthin and Cowie[46] would tend to reestablish the belief held by Hippocrates.

Hippocrates seemed to recognize also a form of phthisis which arises through φύματα, Latin *tubercula.*[47] Many scholars have accepted this expression as evidence to prove that he was acquainted with miliary tuberculosis. Virchow[48] entirely rejects this explanation and draws the conclusion that the word φύματα was used synonymously with abscesses. His position is unconvincing and untenable. The question has been discussed pro and con for ages and "adhuc sub iudice lis est." It is possible that an excessive enthusiasm for the medical knowledge of the ancients has tempted and induced some to read too much into the Greek word, and an examination of the different passages in which φύμα occurs cannot, of course, reveal any direct proof that Hippocrates understood the modern scientific theory of tuberculosis. Indeed, this would be too much to expect, for there was no such thing as scientific medicine viewed from the modern standpoint. We may also say that the exegesis of several passages is purely a relative matter, inasmuch as the Greek readings are not always uniform. The reader can safely adopt the following conclusion: Hippocrates as a result of his keen observation, which is everywhere apparent in his work, based his use on the word φύματα upon a visual acquaintance with the nodular elements found either in the lungs of animals or in men, for he had ample opportunity to investigate them; he recognized the tuberculous state but did not understand that the tubercle bacillus was an essential condition of the disease. Clinically he did not demonstrate the disease known as miliary tuberculosis, but visually "the hard and unconcocted φύματα" amounts to the same thing.

Fl. 427 B.C. The habitus phthisicus[49] of Hippocrates, as representing a peculiar, flat-formed chest with protruding scapulae, delicate features, long neck, sloping shoulders, and imperfect physical development about the chest, aroused the mirth of Aristophanes and the familiar sight of emaciated consumptives doubtlessly provoked the word φθίνυλλα as an epithet of reproach: "Yes, by Zeus, you skinny old consumptive."[50]

Ca. 420 B.C. Among the miraculous cures recorded on the stele at Epidaurus the inscription mentions a consumptive patient, and without doubt many tubercular patients sojourned to the same place for treatment.[51]

Fl. 399 B.C. Plato also touches upon phthisis. He says: "If a person sells a slave who is ill with consumption . . . or with some other lingering and incurable disease not noticeable to the average man, in case he is sold to a physician or trainer, there shall be no restitution."[52]

Fl. 380 B.C. It would seem that already in the time of Isocrates a widespread belief existed that consumption was a contagious and infectious disease and could be readily communicated. This is well illustrated in the Aegineticus[53] in which Isocrates discusses a dispute about an inheritance willed by a certain Thrasylochus to a friend who had nursed him in his lingering illness. The disease was consumption and is several times mentioned or referred to by the Greek words φθόη, δ̀ς ἔμπυος μὲν ἦν πολὺν χοόνον, τοσοῦτσν μὲν χοόνον ἀσθενήσαντα; Thrasylochus was confined to his bed for six months and was nursed by the friend till he died. The friends of the latter, however, warned him against the danger of such an undertaking, which he recalls in the following words: "As many of my friends as came to see me, expressed their fear that I also would die, and advised me to look out for myself, asserting that most of those who have been in attendance on such a disease have themselves likewise perished."[56] This passage is especially instructive in that it proves a general acquaintance with the communicable aspect of consumption on the part of those who seem to have had no special knowledge of medicine.

Fl. 347 B.C. The philosophic and scientific mind of Aristotle frequently gave expression to practical medical discussions. He was especially interested in the etiological factors which contributed to specific diseases and from this angle refers to consumption several times. He says that certain weather conditions bring on decay of the bones, cough, sore throat and consumption[57]; in contrasting the essential difference between incontinence and intemperance he says: "Depravity resembles dropsy and consumption amongst diseases, and incontinence resembles epilepsy; for the former is a permanent, the latter not a permanent trouble."[58] He also is of the opinion that the hair grows in some diseases, as especially consumption,[59] and while Hippocrates tells us that consumptives lose their hair, these two statements are none the less true. In incipient phthisis the hair grows rapidly and long, but in the last stages of the disease it falls out. To a modern reader, however, Aristotle is most interesting in this connection because he had very definite views on the contagious and infectious aspect of consumption and includes it among the communicable diseases because it vitiates the air in the manner of a pestilence. He asks:

> Why is it, that those who approach a consumptive patient are stricken with consumption? . . . The contagion of consumption arises for the reason that it infects the breath and makes it heavy; moreover, all diseases, which originate from a corrupt exhalation, such as pestilential, attack us very readily; for he who approaches inhales air of that kind.[60]

Fl. 355 B.C. Demosthenes does not pay the offspring of Lycurgus a very high tribute for he refers to his son Pytheas "who has grown wealthy enough to keep two mistresses, who have happily brought him on his way as far as consumption." The word here used is the Attic word φθόη.[61]

Fl. 322 B.C. Menander gives an instructive figurative use of φθισικόν; he represents envy as the worst of all ills that, irrespective of time, makes the impious plans of a godless soul a consuming disease.[62]

Ca. B.C. Third Century. The ancient sepulchral inscriptions are too stereotyped to present much explicit information concerning definite diseases, but among the few bearing on consumption the most interesting by far is that of a child who died at the age of four years, five months, and twenty days. This inscription was found near Smyrna and reads as follows[63]:

> A helpless child am I who have reached this tomb, O traveller; even you who have chanced upon my stony slab will straightway weep at the suffering which I have endured in the brief compass of my life. When the Hours brought me to light by the travail of my mother, my father joyfully took me up in his hands from the earth and washed me clean of the impure blood, and he in person placed me in swaddling clothes and made prayers to the gods which were not to be; for from the first the Fates had made all decisions about me; and my father chose my mother as my nurse and reared me. Forthwith I grew lustily like a young plant, and was beloved by all; but in a short time the seal of the Fates came upon me, who made me fast with a dread disease about the testicles; but my unhappy father healed my dire disease, thus thinking to preserve my fate by his treatment. And then, moreover, another disease seized me, most grievous by far, and many times worse than the former; for the metatarsi of my left foot had sepsis in the bones, and so my father's friends performed an operation on me and took out my bones which were the cause of grief and groans to my parents, and in this way I was healed again as before; not even thus did my ill-boding birth have its fill of smiting, but fate again brought upon me another disease of the belly, enlarged my intestines and wasted away the other parts until such time when my mother snatched life from my eyes; this I suffered in the short space of my life, O stranger, and I, doomed to a sad end and survived by three unwedded sisters (or brothers), have left the hated consumption as an heritage to those who begat me.

How poignant, full of appeal and simple pathos! How distinctly modern the childlike emotions in health and sickness here depicted! "The Great White Plague" has truly exacted its toll in all ages among the young and old, and the above inscription with but slight alteration could well be transferred over to the graves of numerous unfortunate children whom Fate still serves in similar fashion.

This inscription, however, chiefly concerns us as an interesting case of consumption in which a secondary condition has been set up. We may safely conjecture that the two diseases referred to are but manifestations of a general tuberculosis which seized visibly upon the testicles, the metatarsal bone and the intestine, and so resulted in urogenital tuberculosis, tuberculous osteomyelitis, and tuberculosis of the intestine. A sepsis of this kind is fairly common in children even today especially in systemic tuberculosis. It has been found, too, that not less than 25 to 30 per cent of the cases of tuberculosis which occur in early childhood are the result of intestinal infection and that the curve of incidence of tuberculosis in children begins at the early age of six months, and falls especially between the ages of three and four. This undoubtedly can be explained by the fact that in early childhood children convey the infectious material to their mouths by their fingers, inasmuch as they play on their hands and knees during that period, and also by the fact that at this time infected milk would be taken most freely. Such a theory would be a very plausible explanation in this case. The medicines administered by the father when the first symptoms of the disease appeared were evidently given on the basis that his child had two distinct maladies, whereas the two may have been in reality one and the same disease. It is interesting to note also that the physicians of those early days already recognized that practically the only hope of eradicating tuberculosis of the bone lay in surgical methods, and it would seem from the wording of the inscription that the operation was at least locally successful.

In the absence of more complete information a final diagnosis can hardly be attempted and other variants may be offered in explanation; whether this case be regarded as an example of traumatic dissemination or of a tuberculous infection following whooping cough, measles, or some other disease to which children from the ages of three to eight are very predisposed, we may be reasonably sure that this Greek child had tuberculosis of the testicles, of the bone and of the intestine, whether as a primary or secondary factor.

Third Century or Beginning of Second B.C. Another inscription, found near the temple of Aesculapius at Epidaurus mentions a man who lay ill with a hated disease, ἔνπυος ὢν στῆθος.[64] This man had suppurating lungs, and the Greek expression here used is analogous to the passage in Isocrates already quoted,[56] which clearly refers to the consumptive in question.

Second or First Century B.C. An inscription from Cleonae does not admit of satisfactory restoration but it is sufficiently intelligible to show that a lady named Nomonia, had "wasted away with hateful consumption."[65]

Fl. 8 B.C. Diodorus Siculus informs us that Phayllus, a general of the Phocians, died in the Sacred War, 351 B.C., as a result of consumption, which lingered a long time and caused him great physical pain.[66]

Fl. Augustan Age. Crinagoras of Mytilene does full justice to "the bones of the scoundrel who lies in this unhappy earth; it crushes the protruding breast and the unsavory, jagged row of teeth and the legs fettered like those of a slave, and the hairless head, the half-consumed remains of Eunicides still full of pale consumption."[67]

Fl. End First Century A.D. Dioscorides' "De Materia Medica" is chiefly interesting for the therapeutic agents enumerated, and was extensively used by Galen. Inasmuch as this phase of consumption will receive more detailed consideration under the material found in Galen we shall leave the latter author to take care of the former.

Fl. 80 A.D. Plutarch never fails to make an interesting contribution; a fitting answer is the following: "But we may answer them (young fellows who take delight in showing off their smattering knowledge of logic and mathematics) with Philotimus, who, on being asked by a consumptive for a remedy against a whitlow and perceiving his condition by his color and dyspneic condition, replied: 'Sir, you have no reason to worry about that'"[68] Again: "The sight of a consumptive man is no delightful spectacle, but the pictures and statutes of consumptives we can view with pleasure because imitation directs the mind to that which is conformable to the nature of the thing."[69] In another passage our author pokes fun at the professed happiness of Epicurus and his followers and suggests that not even in their case was human reason able to avert diseases; "for if it could, no man with sense would ever fall under stranguries, gripes, consumption, or dropsy."[70]

In the "Parallel Lives" as well there are several interesting allusions to consumption": He [Aratus] offered sacrifices called Antigonea in honor of Antigonus, . . . to the praise of a man rotting away by consumption."[71] Subsequently Antigonus is again referred to: "Besides his malady had now thoroughly settled into consumption and continual catarrh. . . . In the schools we were wont to learn that, after victory was won, he exclaimed for joy: 'O glorious day,' and forthwith bringing up a quantity of blood, that he fell into a fever, which never left him till his death.[72] Plutarch tells us that the Roman people were possessed with an insatiate desire to see Tigellinus dragged to execution, that they were so insistent on this that the emperor was compelled to check their spirit by an edict "announcing that Tigellinus could not live long, inasmuch as he was wasting with consumption, and requesting them to refrain from making his government appear cruel and tyrannical."[73]

First Century A.D. Another very famous Greek physician was Aretaeus of Cappadocia, who probably practiced medicine during the time of Nero. In many respects he follows up the principles of the Father of Medicine, but his description of phthisis is even more clear and definite. In the particulars of this disease he gives the careful description of an eye-witness. According to him it is caused (1) by an abscess in the lungs; (2) by a chronic cough; (3) by hemoptysis.[74] In the same passage he also makes a distinction between real phthisis and empyema, and farther on in the book[75] he gives a comprehensive description of pulmonary abscesses as a result of which the lungs become ulcerous and finally phthisical. In another book we have a further excellent description of phthisis as caused by hemoptysis, and the symptoms of this disease resultant from chronic catarrh are accurately set forth. His discussions are all convincing and clear and evince a thorough medical knowledge. What a lucid picture he portrays here:

> If an ulcer arises in the lungs from an abscess, or from a chronic cough or from the bringing up of blood, and if the patient cough up pus, the malady is called φθόη and φθίσις; but if the chest or side develops matter, which is moreover brought up by the lungs, the name is ἐμπύη. But if in addition the lungs keep back an ulcer, and are eaten up by the pus that has gone through, the disease no longer receives the name ἐμπύη but φθόη. Moreover, it is also accompanied by a continuous fever, latent and never ceasing, but escaping notice during the day by the perspiration and coolness of the body.
>
> There are innumerable varieties of the sputa, livid, black, dark, yellowish-white or pale green; broad, round; hard, indissoluble, or spongy and readily dissolving; without smell or ill-smelling; all these are varieties of pus. But those who try the fluids either with fire or water seem to me not to know consumption very well; for the sight is more to be trusted than every other sense, not only relative to that which is brought up, but also with regard to the appearance of the sick person. For if a layman should see a person pale, weak, coughing, and emaciated, he rightly divines consumption. But those who have no ulcer in the lungs, yet have wasted away with chronic fevers, cough frequently, hard, and fruitlessly, bringing up nothing, such persons are likewise called consumptive, and that too advisedly. They

have a heaviness in the chest, for the lungs are without feeling of pain, distress, anguish, no appetite, chills in the evening and heat in the morning; sweat as far as the chest, more intolerable than the heat . . . their voice is hoarse, the neck somewhat bent, thin, and not easy to control; fingers slender, but joints thick; of the bones there is the form only, for the flesh wastes away as if consumed by a slow smouldering fire; the nails of the fingers are curved, the pulps are shrunken and flat; for on account of the loss of flesh they retain neither their distension nor roundness. . . . The nose is sharp and slender; checks protruding and red; eyes hollow, glittering, and bright; countenance swollen and pale, or livid. The thin parts of the jaws rest upon the teeth and resemble a smile, in other respects corpse-like. So also in all other parts they are slender without flesh; the muscles of the arms not perceptible, and not even a trace of the breasts, while the nipples alone are visible. It is not only easy to tell the number of their ribs, but also to know where they terminate; for not even at the vertebrae are the articulations easy to conceal; and the conjunctions with the sternum are also visible; the spaces between the ribs are hollow and rhomboidal. According to the circumference of the bones the hypochondriac region is sunken and drawn back, the region of the stomach and the flanks clinging to the dorsal region. The joints are distinct, distorted and devoid of flesh, as are also the tibia, hip and humerus. The spine of the vertebrae, formerly hollow, protudes, and the muscles on both sides have wasted away; the full shoulder-blades are clearly visible just as the wings of birds. If such patients have bowel-complaint, they are hopeless; but if there is a turn for the better, a condition opposite to that which is fatal recurs.

The old are not freqently afflicted, but they seldom recover; the young till the prime of life become phthisical from blood-spitting, and get well, though not readily; children continually coughing even till they become consumptive, yet recover; the habitus phthisicus is found among the slender, those whose scapulae are flat and wing-like, those who have prominent thyroid cartilage, are pale and have narrow chests; its haunts are the moist and cold climates, the twin-brothers of the disease.[76]

Fl. 90 A.D. Epictetus reminds us that we must bear life's burdens in proportion to our strength, but that we must never neglect nature; for a certain course may suit a strong man, but not a consumptive, whose φλέγμα he represents figuratively as the drivel of the sickly novice in philosophy. To benefit mankind we must carry our principles into everyday life and not vent "our own phlegm upon them." Even a Cynic, he says, "has need of a physique of a certain quality; for if he come forward with a consumptive figure, thin and pale, his testimony no longer carries the same force."[77]

Fl. 100 A.D. The Greek physician, Rufus of Ephesus, states that in cases of consumption an incision of the chest near the lowest rib and penetrating well into the interior of the lung has often produced good results; for it allows the pus to drain out and so causes the ulcer to absorb. The consumption which he here refers to is the result of empyema.[78]

Fl. 140 A.D. According to information vouched for by Appian, Lepidus died of consumption in Sardinia in 78 B.C.[79]

Fl. 160 A.D. The psychoanalytic mind of Artemidorus Daldianus in his "Oniorcriticon" presents to the modern reader ample material for psychological research. Schopenhauer made the statement that the ancient Artemidorus taught in reality a true symbolism of dreams. That dreams are not to be taken literally just as they are presented in sleep, but that such images are to be understood symbolically is not a new principle of analytical psychology but an ancient idea which appears at its best in Artemidorus. His five books are full of extraordinary material, which dispels all superstitious wonder and mystery but seeks a true explanation for all dream phenomena. The efficacy of dreams and their interpretation are pictured sometimes in a most amusing and entertaining manner. To have a hood of sheep's wool on one's head instead of hair portends a lingering disease and consumption, because the constant wearing of such a hood makes it seem to have grown together with the head.[80] Among the ancients such hoods were worn by the sick and old. False teeth evidently did not enter into the psychology of Artemidorus for "if all teeth fall out, it signifies . . . to the sick a lingering illness and consumption, but at the same time gives them the assurance that they will not die; for without teeth a person cannot partake of any nourishing food except gruel and porridge; moreover no one of the dead loses his teeth."[81] If a person dreams that he is drinking fish-oil, his dream typifies consumption; "for as a matter of fact fish-oil is nothing more than a mass transformed by a process of putrefaction." The Greek word σηπεδών here used suggests a fundamental process in consumption, namely sepsis.[82] Pickled and salted meat denotes protraction and postponement in one's plans; for by salt, meat is indefinitely preserved." In other things, however, it symbolizes consumption and grief, but often also a disease because by the process of salting meat is made tender."[83]

> Whatever is unceasingly about some portion of the body has the same relation to that which has grown to it. Accordingly someone dreamed that wood grew out from his fingers, and another in turn that he had wool growing from his chest and scapulae. The first became a pilot, the second a consumptive; for the one constantly had in his hands the helm, but the other as a result of his disease wool about the breast.[84]

Fl. 160 A.D. In Lucian Hermes enumerates to Charon some of the messengers of Death who carry men off in the midst of their hopes. "His messengers and servants are very many, as you see . . . chills, fevers, consumption, inflammations of the lungs." Men have imagined that their present possessions would be theirs forever, and so when the servant, standing at the bedside, summons them and leads them away "in the bonds of fever or consumption," they make a great ado about it, for they never expected to die so soon.[85]

Fl. 160 A.D. Aristides refers to consumption in several places and shows quite clearly that he was thoroughly familiar with the disease and its symptoms. Because of his own long illness he was especially interested in diseases and their cure. Though a man of learning and understanding, he seems to have believed fully in the efficacy of dream-cures as reported in the temple of Aesculapius. He mentions consumption in this connection first in a reference to a severe attack of cold, violent and prolonged cough, then the characteristic emaciated condition visible in the face and jaws; this he says, "the god declares to be consumption." He then recounts how a cure of consumption and catarrh was effected in a dream.[86] Subsequently in discussing the importance of concord, agreement, and unanimity of feeling among cities, he contrasts and compares his statements by saying that "factional discord is everywhere a terrible thing, productive of turbulence and confusion, and akin to consumption. For it draws and sucks out from him upon whom it grows all strength; it completely drains him and does not cease until it utterly destroys him root and branch."[87] He further severely decries the tendency of his times to find something useful and charming in the corruptions of true eloquence, a fallacy which resembles an idea that those whose bodies are ill with consumption, dropsy and leprosy are by far the most comely; and that they have many admirers, no one of whom would be glad to meet them, while those who are in excellent health and whose beauty is in high esteem are inferior to them.[88]

Fl. 163 A.D. Galen, with comprehensive thoroughness that is characteristic of this Greek master mind, omits very little in his pathogenesis of consumption. It will be profitable to assemble the material in his work under several distinct pathological divisions.

Definition. Consumption is an ulceration of the lungs, breast or pharynx accompanied by a slight cough, fever, and complete emaciation of the body; it is a wasting away of the body by reason of suppuration in the lungs or breast, and its condition of suffering is either difficult to cure or incurable. Medically speaking, φθίσις differs from φθόη; for the former is usually defined as the complete diminution and melting together of the body, while the latter is fitly defined as a consumption and destruction of the physical organism from an ulcerous condition. The growth of the body is often impaired, and this disease is called by some ἀτρθφία (macies), by others φθίσις of the part affected. He says that the Athenian especially called the φθίσις of Hippcratess φθόη, a disease which is the result of incurable ulcers of the lungs and so brings a defection and emaciation of the entire body, and a slight fever as well. Consumption belongs to the lingering diseases, together with dropsy, melancholy, and empyema. It is especially prevalent in the fall of the year, though found also in the spring. Galen reminds us that Hippocrates also mentions ischiadic consumption as a result of which the body wastes away because of sepsis near the "os sacrum"; likewise also renal consumption, inflammations of the liver and spleen when changed into pus consume the patient. These suppurations, however, are much more readily healed, and so less dangerous than those which affect the lungs.[89]

Etiology. One of the causes of consumption is blood spitting, which in turn may be brought about by youthful excesses, trauma, colds, lying on the ground or similar conditions. Often it is the result of pleuritis, particularly if the latter is not cured within a period of forty days. It may further be caused by defluxions of phlegm from the head to the lungs, bringing about successively suppuration of the lungs and consumption.[90] Then again it may be the result of hemoptysis, suppression of blood discharges, and occasionally comes on after a quartan fever.[91] Fluctuations of air in the early springtime and fall make many consumptive.[92] Consumption is a communicable disease and so may be caused by contagion or infection, for "it is a dangerous thing to associate with people who have it, and especially those who emit such a putrid breath that the homes in which they lie ill smell bad."[93] Lung and breast affections are prolific factors of causation; pneumonia and empyema also contribute tubercular patients. Young men are more susceptible to the disease from the ages of eighteen to thirty-five, because that time of life is more prone to intemperance and to those violations of nature which may bring on blood spitting; and consumption invariably follows the latter.[94]

Semeiology. The habitus phthisicus of Hippocrates again persists, and so the "ancient physicians call those consumptive and wasting away who are physically disposed to suffer the disease. Moreover, to this class especially belong those whose breast is so absolutely narrow and hollow that their shoulders project like wings, whence they are called πτεουγώδεβς, that is "winged." Furthermore, the head of these is readily filled up and sends forth many defluxions to the respiratory parts. When both symptoms occur in the same person, namely the malformation of the breast and the weakness of the head, such natures are exposed to consumption.[95] "Further symptoms are found in the expectoration of a fluid very similar to liquid bile, of a color midway between yellow and pale-yellow, but without acridness; the quantity becomes daily greater, a slight fever accompanies the process, and finally emaciation ensues. In the course of about four months a little blood is ejected with the pus, the fever increases, and the wasting away becomes more marked, until complete physical exhaustion sets in with consequent death. The disease lasts for six months or longer.[96] Consumptives usually suffer a loss of hair, a condition which indicates that the patient is dangerously ill; in the event that diarrhea supervenes, death is an inevitable consequence.[97] Consumption by empyema is due to the formation of pus between the breast and lungs, and unless this is ejected by coughing, a slight fever will occur, increasing at night and becoming static; sweat arises, cough and a desire to cough, the patience expectorates very little on account of the density and stickiness of the pus as well as the thickness of the membrane which encompasses the lungs; eyes become hollow; cheeks have a ruddy glow due to the fever and the cough. The fingers and their nails appear claw-like, and as the disease drags along swellings appear on the feet; the appetite fails entirely, and even pustules break out on the body.[98] In true phthisis the patients will continue to live in their emaciated condition as long as they can cough up and clean out the lungs by their sputa, but when that ceases, the respiratory passage is obstructed and the patient is suffocated.[99] The pulse is small, weak and faint, though moderately fast.[100] The sputa is globular and can be tested by throwing it on live coals, in which case it will give off a very obnoxious odor.[101] The paroxysms become daily more aggravated at night and are accompanied by chills and dyspnea.[102] The glance of consumptives is timid and their eyes have a characteristic appearance as if full of χνοῦ—dried up as if full of flock or possibly dust.[103]

Therapeutics. Effective remedies include proper climatic conditions where the winds are favorable and gentle, as for instance Egypt and Libya, countries with drier climates. Both external and internal medicines were employed, comprehending proper bathing, warm fomentations of oenoleum; tus, pepper, orpiment (sulphur and arsenic), eggs, milk, butter, storax, cabbage, laurel-oil and the best wine; myrrh-oil steeped with a potion of lupines and used first as a fomentation on the feet, which should then be wiped off and smeared with butter, a process to be repeated three times; inhalation of fumes generated from the ivy; hyssop and fleawort boiled in sour wine taken as a drink; parched radishes and colt's foot; laurel berries and pepper, pine nuts with honey to be given early in the morning and late at night; horehound cooked with honey; one ounce of parsley and pepper slowly boiled with one pound of honey to be taken internally.[104]

Galen recommends the following as a very efficacious remedy which has restored consumptives, whose condition has been generally despaired of, to their former health: Take a mountain-squill of one pound weight, cut off the hard portion, but subdivide the soft parts, and place in a receptacle of the strongest vinegar; then steep for thirty days during the hottest weather; next remove the squill and press it out, using the resultant potion early in the morning each day.[105]

Another is compounded of the juices of mandrake, myrrh, the flower of the wild pomegranate, castoreum,. saffron, opium, anise, parsley, storax, hyssop, seeds of white henbane, all put together according to directions and made into lozenges.[106]

Blood spitting should be checked by cutting a vein, by stopping it with posca (vinegar and water), by diminishing its supply through fasting, or by some simple remedy like acacia, hypocist, the flower of the wild pomegranate, juice of the plantain, and others of similar kind. Glowing hot irons are useful against suppuration, for they dry up the breast and direct the flow of pus into the outer parts; Galen says that physicians of the modern school have been wont to alleviate it by poultices and antidotes, and by quick purging through the avenue of the mouth.[107]

Our author mentions a large number of remedies of this kind, proving conclusively that the disease was common and frequently treated. Directions for the amount to be used in preparation as well as the dose to be taken are always clearly and definitely stated.[108] The name of Dioscorides often appears in the discussion of various remedies, and Galen was undoubtedly dependent upon him for many of his therapeutic agents.[109]

General. Tubercles are also mentioned by Galen and on examination of the various passages the conclusion reached under the discussion of Hippocrates will be fortified. However, exacting we may be, we can hardly escape the conviction that Galen also observed the hard unconcocted tubercular nodules visible to the naked eye.[110] To anyone who reads Galen with an unbiased mind and a fair degree of care it becomes increasingly clear that the ancients were afflicted with most of the tubercular manifestations known in modern times. The frequent employment of the terms, gibbosities, coxa, tumor, phymata, tubercula dura and cruda cannot mean anything else and furthermore presents corroborative material of the first order.[111]

Fl. Second Century A.D. Moschion says that sterility both in men and women is due to a diseased condition, and especially is this true in the case of lingering diseases. In the female this often takes place, if she becomes thin, emaciated, consumptive, or wastes away.[112]

Fl. 180 A.D. Pausanias interestingly describes the dream of a certain Phayllus in the following words:

> Among the votive offerings to Apollo there was an ancient bronze statue of a man whose flesh had wasted away and whose bones alone remained. It was said by the Delphians that this was a votive offering of Hippocrates, the physician. Phayllus fancied that he himself resembled this image, and forthwith consumption seized him and fulfilled the prediction of his dream.[113]

In another passage he tells of the offerings of Micythus at Olympia in fulfillment of a vow that he had made for the recovery "of his son who had been afflicted with consumption."[114]

Fl. 180 A.D. It is instructive to note that in his enumeration of the common diseases Pollux groups the following together: φθόη, φθίσις, φθίνειν, τῆξις, φθίνης, νόσος, τηκεδών, ἐκτετηκέναι; it would seem therefore that these expressions are more or less synonymous and have a kindred connotation.[115]

Fl. 180 A.D. Dion Cassius says of Seneca: "After Gaius had ordered him to be put to death, he let him go because he believed one of his concubines who said that he was ill with consumption and would die ere long."[116]

Fl. ca. 200 A.D. Diogenes Laertius tells us that Antisthenes, the eminent philosopher, died of a lingering disease, and that he refused to end his suffering by the sword, but bore his disease the more calmly from his love of life. The following epigram is quoted and proves that the lingering disease was consumption: "In life you were a bitter dog, Antisthenes, born to bite people's minds with sayings sharp, not with actual teeth. Now you are slain by fell consumption; perchance someone may ask; 'But why it is so?' 'Tis altogether necessary to have some guide to Hades.'"[117]

Fl. Second or Third Century A.D. Diogenes Oenoandensis, the Epicurean, it would seem has consumption in mind in the following: "For often the body, having been compelled to surrender by a long disease, has been reduced to such a condition of thinness and consumption that the skin is almost withered and clinging to the bones while the nature of the inward parts seems to be void and bloodless; yet the soul, remaining alive does not permit the living organism to die."[118]

Fl. 250 A.D. Philostratus describes a well sacred to Zeus, near Tyana, where the water is favorable and sweet to those who keep their oaths, but to perjurers it brings immediate justice; for it attacks their eyes, hands and feet, and as a result "they are seized with dropsy and consumption."[119] In another passage he relates how the king of Babylonia spared the life of a eunuch who had bestowed amorous attentions upon one of the king's concubines, and whose misdeed was punishable with death; but Appollonius suggested to the king that no consumption is so wasting as is love to its devotees.[120] In a third passage in which he discusses the distinction between medicine and gymnastics he asserts that physicians cure various diseases such as catarrh, dropsy and consumption as well as epilepsy by an injection or drinking potion or by a plaster application, while the gymnastic art overcomes such a difficulty by proper diet and massage. In the next chapter he enlarges upon this viewpoint by the statement that "in the art of healing doctors must become specialists, one an authority on wounds, another on fever, a third on the eye, and a fourth on consumption.[121]

Fl. Third Century A.D. Phrynichus, the Greek Sophist, defines φθόη as ἡ φθίσις ἡ ἐν τῷ σώματι γινομένη and so substantiates previous definitions.[122]

Fl. 355 A.D. Oribasius, the physician of Julian the Apostate, gives us only abstracts of earlier works, and his discussions on consumption follow Galen closely. His assertions merely serve to corroborate the analysis already given.[123]

Fl. Fourth Century A.D. Hesychius gives τῆξις and φθίσις as equivalents of τηκεδών and in this interpretation agrees with Pollux and the several instances enumerated.[124]

Fl. 970 A.D. The citation from Suidas has already been presented.[125]

III. REFERENCES TO CONSUMPTION BY ROMAN WRITERS

We may now seek for further basic evidence concerning consumption among Roman writers. As was the case respecting literature and art, so also in medicine the Greeks exerted a great influence over the Roman mind and left the impress of their knowledge in unmistakable terminology. The Roman word for consumption is tabes, which signifies merely "a wasting away"; other words are phthisis, tussis, syntexis, atrophia, cachexia and their various derivatives. These words are practically all of Greek origin; that fact, however, does not invalidate the evidence which we find in Roman writers. It may be well also to recall that many of the greatest Greek medical minds received their inspiration almost entirely in Roman environment.

Date Uncertain but Very Early. A most interesting find of a medical character that seems to be distinctly Etruscan, was found in 1836 in a small lake located on Monte Falterona, a summit on the Apennines. Here were brought to light bronzes of a votive character (ex-votos), probably offerings at some ancient shrine. Some have been clearly identified as being representations of persons suffering from some diseases. Among others there was a frame wasted away by consumption or atrophy. Dr. Emil Braun, the archeologist, offered a novel theory to explain the presence of these ex-votos in a lake at the top of a mountain, and, fanciful though it may seem, one might find in it a possible solution of a curious problem. He suggests that this lake was formed by volcanic action prior to the period when the bronzes were deposited. In time the waters acquired a medicinal quality from the trees the lake contained, yielding a property which modern chemistry extracts from creosote. He calls attention to the fact that the diseases shown in the ex-votos are just such as might be alleviated by that medicine and that a base of creosote is used by medical men in modern times to curb attacks of phthisis. Patients laboring under consumption seem especially to have frequented the lake. He also points to similar lakes in China and the editor's footnote refers to several ancient examples. These bronzes may date from a very early period.[126]

Ob. 184 B.C. The earliest literary allusion to consumption is found in Plautus.

In one of his fragments he says: "He was to me the bile, the dropsy, the consumption, the ague."[127] In the Rudens, Charmides entertains the heartfelt wish that the leno Labrax "would spew up his lungs."[128]

Ob. 50 B.C. The traditional blindness of love is a source of amusement to Lucretius especially when the lover's amorous ecstasy is manifested in expressions of endearment over clearly abnormal physical conditions: the lover calls his sweetheart a "slim dearie" when she cannot live from thinness (*pro macie*), while "she is only slender who is practically dead with consumption."[129] Likewise in the description of the plague at

Athens he recognizes that a tuberculous condition may supervene even if a person escaped the doom of death during the plague, for subsequently "consumption and death awaited him."[130]

Ob. 43 B.C. Cicero may have had consumption in mind when he said that Aesculapius did not destroy Dionysius by causing him "to waste away with a wretched lingering disease," for consumption is often so designated.[131]

Ob. 16 B.C.? A pathetic description of death by consumption is given by Propertius: in a poem which is an imprecation upon Acanthis, an old wench, who had attempted to alienate the affections of his Cynthia. Venus, however, came to his rescue and he saw "the cough gathering in her wrinkled throat and the bloody spittle pass through the hollows between her teeth; I saw her breathe out her foul breath in the rags which were her father's; the tumbling shed was chilled from the cold hearth. Her obsequies were the stolen bands around her thin hair, and a cap faded by her filthy condition, and a dog too wakeful to soothe my sorrows, when with stealthy thumb I had to slip the bolts of the door."[132] This is the only example in which the actual death throes of a consumptive are pictured. It is full of pathos, though lack of sympathy for her condition is very apparent, for the poet vents his wrath even upon her one and only friend, the little dog. The symptoms here enumerated are self-explanatory and the very characteristics so often delineated by the various medical authors: cough, ejection of blood, prominent throat and teeth, foul breath, and loss of hair, stamp this case quite conclusively as consumption.

Ob. 8 B.C. Horace refers to consumption as a cough, and mentions it almost in one breath with pleurisy, a fact not without meaning.[133] The following expression also probably refers to the same disease. "If perchance any of your fellow-heirs, who is rather along in years, will have a bad cough, you tell him that you will be glad to make over to him from your share"; Kiessling says advisedly on this passage," ein boeser Husten als Zeichen der Schwindsucht."[134]

Fl. 19 B.C. Vitruvius, in discussing the importance of building in such a way as to avoid certain harmful fluctuations of air, suggests that sick people more readily recover where such noxious atmospheric conditions have been avoided. Although there are diseases, such as colds, cough, pleuritis, consumption and spitting of blood, which are cured by invigorating remedies, and then only with difficulty, yet a mild invigorating climate and atmospheric condition, free from violent storms is a great aid towards recuperation and rejuvenation.[135] From another passage we derive the information that resin was used as a medicine for consumptives.[136]

Fl. 12 A.D. The *lenta tabe* of Manilius probably refers to the tubercular condition of those who survive the pestilence, a passage which may be profitably compared with that of Lucretius.[137]

Ob. 17 A.D. Ovid seems to employ a figurative semeiology of consumption in his phraseology when he describes Envy as spreading black poison throughout the bones of Aglauros and the midst of her lungs; she wastes away in extreme wretchedness with a slow consumption, as ice smitten by the rays of the sun; she burns not with a fire that sends forth flames, but with a gentle heat; by degrees a deadly chill enters her breast, stopping the passages of life and respiration.[138]

Ob. 17 A.D. Livy has consumption in mind when he says that the states of the Faliscans and Tarquinians were enfeebled by plundering and burning, as by a slow consumption.[139]

Ob. 65 A.D. Seneca, the Stoic philosopher, was deeply interested in things medical because he was beset by constant tendencies to consumption; he was a veritable *Schwindsuchtskandidat*, if we may believe Dion Cassius in the passage already quoted.[116] He himself also testifies that during his youth he had been liable to frequent catarrhal affections, which, through lack of attention, became chronic, and as a result later on he became emaciated.[140] This experience he expresses more generally in one of his epistles, where he regards phthisis as the inevitable result of a chronic cough that is of long duration and standing.[141] "The most temperate are attacked by diseases, the strongest by consumption."[142] His own experience is everywhere evident; he expresses his sympathy for his friend Lucilius because he is tormented by chronic colds and fever, for he can appreciate his plight from personal experience; and his condition became so serious that he was reduced to the utmost emaciation and almost coughed himself to death. His subsequent remarks point to pulmonary consumption: "Now you may mention what you will, bad colds and a persistent cough which forcibly brings up parts of the lungs . . . "[143]

Fl. 50 A.D. The modern medical world has been only too ready to cast aside one of the greatest medical writers of antiquity in the person of the Roman writer Celsus. Two things are chiefly responsible for this condition, the lack of a modern up-to-date English translation and the mistaken notion that his testimony seems to have no value because external proof cannot be adduced that he was a professional or even a practicing physician. An idle statement on the latter notion, however, would hardly suffice to convince the skeptical; for a conclusion on that score can be impartially reached only by a thorough study of his works, and they everywhere give evidence of an intimate medical knowledge. Whether physician or not, his testimony cannot be disregarded.[144]

Celsus wrote a superb description of consumption and its different species[145]:

> The tabes [consumption] often keeps those, whom it attacks longer in a state of continued danger. And of this also there are several species. One of them occurs when the body is not nourished; and, since something is naturally ever leaving it, while nothing succeeds in its stead, a most extreme emaciation takes place; and, unless an attempt is made to cure it, death ensues. This the Greeks call ἀτροφία. It is wont to happen from two causes; for either from excessive fear a person takes less, or from excessive desire he takes more than he ought to; thus either too little weakens or too much vitiates. There is a second species, which the Greeks call καχεξία, where the condition of the body is bad; and on this account all of the nutriment becomes putrid. . . . Besides the consumption it sometimes also happens that the surface of the skin is made rough and irritated by frequent pimples or ulcers, or some parts of the body swell. The third, and by far the most dangerous, is that species which the Greeks call φθίσις. It generally starts from the head; thence it trickles down into the lungs; then follows an exulceration, and as a result there occurs a slight fever; and even though this subsides, nevertheless it returns; there is also a frequent cough; the patient spits out pus, and sometimes bloody matter. Whatever the patient ejects by coughing, has a bad smell, if placed upon a fire; and so those who are not sure of the disease, use this means of identification.

Celsus then in turn discusses each division more in detail and gives remedial suggestions. In true phthisis the disease must be arrested in the beginning, for if it continues long, it is not easily overcome. He suggests sea voyages, change of climate, removal of patient to different atmospheric conditions, as for instance from Italy to Alexandria; business must be laid aside, sleep indulged in, catarrhs avoided, crudity guarded against as well as extremes of heat and cold; milk, gruel with milk, rice, spelt butter and honey, and various invigorating foods are mentioned. The most important of them all are proper attention to diet, travelling, sailing, and the eating of gruel. Diarrhea is to be avoided, and frequent vomiting of blood is fatal. The patient should abstain from wine, should refrain from bathing, and avoid emotional expression. Ischiadic diseases, scrofula, and tubercles are described in several passages.[146] All discussions are forcefully and cogently presented, so that the interested reader is delighted with the lucid and concise style.[147]

Fl. 50 A.D. Columella refers definitely to bovine consumption: "Ulceration of the lungs is also a source of great destruction to cattle." "Thence arise cough and emaciation, and finally consumption attacks them."[148] Sheep and swine are also susceptible to the same disease, in which a cure may be effected by passing consiligo through the ear.[149]

Fl. 60 A.D. The facetious cynicism of Petronius is never dull: Plocamus replies to the invitation of Trimalchio to recite some blank verse or to sing: "In days gone by, when I was a young fellow, I almost got consumption from singing."[150] To feign consumption for the legacy-hunters Eumolpus is bidden to cough frequently. Usury and the money-craze become a madness with the common people of Rome and spread through their limbs "like consumption conceived in their silent marrow."[151]

Fl. 69 A.D. Caelius Sabinus quotes Labeo's definition of consumption as a disease of the whole body, and this same passage is used by Gellius. It also appears in the Corpus Iuris.[152]

Ob. 79 A.D. Pliny evidently spent much time with the medical authors and reviewed much of the material along curative lines. The root of consiligo, already referred to, he recommends as a strong therapeutic agent for all kinds of lung diseases and especially for cases of incipient phthisis; it is a most efficient palliative for pulmonary diseases of swine and cattle, even if merely passed through the ear.[153] Laurel-berries taken in wine or boiled in hydromel are beneficial for a chronic cough, difficult breathing, consumption, and all defluxions of the chest because they possess a property that detaches the phlegm.[154] The juice of plantago is a curative for phthisis, and similar remedies are often explained.[155] Milk is administered for "phthisis, consumption, and cachexy."[156] The benefit of a sea-voyage is mentioned more particularly in cases of consumption and hemoptysis, "as we recall that Annaeus Gallio but lately experienced after the time of his consulship."[157] It is interesting to remark that this Gallio was probably the brother of the Seneca, the philosopher, whose consumptive condition has already been discussed. Elephants' blood is beneficial for "syntectici,"[158] and *alica* is distinctly a Roman remedy which is particularly useful when there is a tendency to consumption after a long illness; it should be used in a proportion of three *cyathi* to one *sextarius* of water. This mixture is to be boiled till all the water has evaporated, after which one *sextarius* of sheeps' or goats' milk is to be added. Pliny prescribes its daily use, and suggests that honey be added later.[159] Our author proves here that he is not always reliable, for according to Galen, *alica* was known in the days of Hippocrates, the Greeks using the word Νόνδρος to signify the same spelt-grits.[160] But by far the most novel cure is this[161]:

> Consumptives are cured by a wolf's liver boiled in thin wine, the bacon of a sow fed upon herbs, and the flesh of a she-ass taken with broth. In this manner, especially, the people of Achaia effect the dure of the disease. It is said, too, that the smoke of dried dung (that from the cattle which feed upon green fodder), is beneficial for phthisis if inhaled through a reed[162]; and likewise the tips of cows' horns, when burned, with an admixture of honey in a proportion of two spoonfuls, the whole being swallowed in the form of pills. Not a few people say that goat suet in a pottage of *alica* or freshly melted with honey-wine in the proportion of an ounce to a *cyathus*, the mixture being stirred with a twig of rue, cures both consumption and cough. An author of standing assures us that a patient whose condition seemed hopeless, regained his health by taking one *cyathus* of wild-goat suet with a like quantity of milk. Other writers have said that the ashes of swine-dung in raisin-wine, and the lung of a deer, especially of a hart, dried in smoke and beaten up in wine, are helpful.

Ob. 95 A.D. In the school exercises, which bear the name of Quintilian, we are informed that "consumption let loose upon the inmost vitals daily dispatches some mortals to death before their time," from which it would appear that death by consumption was by no means an uncommon event, even if we make allowance for exaggeration.[163]

Fl. 100 A.D. The disease of Fannia

alluded to by Pliny the Younger was communicable, and contracted from the Vestal Virgin Junia, a relative, while she was acting as her nurse. He states the symptoms as follows: "The fever is continuous, her cough constantly increases, she is reduced to an extreme emaciation, is in a state of complete dissolution."[164] It may be observed that Greek and Roman medical authors quite regularly point to cough as a concomitant symptom of consumption, and not of fever, though cough is mentioned in connection with the latter. In fact several non-medical authors clearly use the word "tussis" to designate the disease consumption. Celsus everywhere emphasizes fever, cough, and emaciation as distinctive signs. It may be instructive, too, to compare Seneca's expression, in which he employs fever, cough, and emaciation several times in unmistakable explanation of his suffering; more than that, the very words convey a striking resemblance: "ad summam maciem deductus."[140] Then, too, the emphasis placed on the contagious aspect of her malady would point to consumption rather than fever[165]; again, the lingering nature of the sickness is significant. Though it is not possible to deduce a conclusive argument from the context, by analogy we may safely conjecture that this illness was a case of consumption.

Ob. 102 A.D. Martial's Naevia is a consumptive, but Bithynicus is reminded that she is not yet ready to die. "Because Naevia breathes hard, and coughs severely, and often ejects her spittle upon your bosom, do you think, Bithynicus, that your fortune is already made? You are wrong: Naevia is flattering you, not dying."[166] His request to Charinus to affix his seal less often, or "once and for all do that which your cough ever and anon falsely suggests" and the racking, incessant cough affliction of Parthenopaeus probably point to cases of consumption.[167] It is a source of the utmost disgust to Martial to be annoyed with an accusation quite so ridiculous, as to have embraced Lydia, who "is as well developed as a bracelet that has slipped down from the arm of a consumptive wench. This thing I am supposed to have embraced in a marine fishpond. I'm not sure; I believe I embraced the fishpond itself."[168]

Ob. 134 A.D. Juvenal with stinging satire says that some men will bear any punishments of the gods if they can but keep their ill-acquired gain, even though they may incur "consumption and ulcerous sores."[169]

Fl. 285 A.D. According to Aelianus Spartianus, Hadrian's habit of traveling bareheaded in the heaviest rains and during the greatest cold brought on a disease that confined him to his bed, caused a fever and later a flux of blood after which death ensued. A subsequent historian tells us that the disease was consumption.[170]

Fl. 340 A.D. The astrological poem of Firmicus Maternus gives several lists of diseases, the inevitable effect produced by the influence of the stars on the destinies of men. Consumption receives a proportionate attention, and is regularly depicted as one of the common diseases, together with black bile, blood spitting, and suppurating diseases. Moreover, the influence of certain definite constellations in specific positions one to the other, as for instance Saturn and Mars, Saturn and Luna, Mercury and Mars, Luna and Saturn, Luna and Mercury, prophesy a consumptive condition.[171]

Ca. 338 A.D. In the legal fragments dating from before the time of Justinian a person who is consumptive is released from guardianship according to law.[172]

Fl. 360 A.D. Aurelius Victor defines the illness of Hadrian more closely, and lends support to Spartianus that the emperor died of consumption at Baiae.[173] It may be said, too, that in a subsequent passage a dropsical complication is mentioned, from which it would appear that his malady was not confined to the former disease.[174] Enlargement of the spleen as a concomitant with tuberculosis seems to be the basis of an interesting metaphor in a comparison of the state treasury to a spleen," because in proportion as the one grows larger, the remaining limbs waste away."[175]

Fl. 397 A.D. The person "who perishes from ulcerous joints by fell consumption" in one of the Hymns of Prudentius is again a tubercular type.[176]

Fl. 400 A.D. The oldest ancient work on the veterinary art is the "Mulomedicina Chironis" of Claudius Hermerus. It is interesting and useful for many reasons, but concerns us chiefly for its identification of bovine consumption. Inasmuch as this work certainly presupposes earlier Greek writings on the same subject, we may conjecture that the knowledge portrayed was available to earlier generations as well. Chronic colds invite respiratory trouble and lung diseases, which may ultimately lead to consumption.[177] The symptoms are recognized as follows: At first no fever, but a wasting condition growing steadily worse, till the bones protrude everywhere; the animal chews and eats abnormally because it is constantly hungry; a hard excrement is evacuated and the diseased animal lives for a long time; eventually it can no longer regain its feet and consequently eats lying down, as if resting. The disease consumes the marrow which is not benefited by the food taken in; the liver becomes smaller and finally wastes away; by degrees the whole body is consumed like a tree which has been deprived of its larger roots, though sustained temporarily by the smaller ones, but in the end it gradually withers up.[178] The *species articularium* is also a kind of consumption whose symptoms are lameness in the feet and joints; skin hard and contracted; a gradual, more accentuated decline; body and especially marrow in the shoulders corrupted by blood; head becomes similarly effected and finally the lungs; the whole physical organism including the joints is diseased; the kidneys too waste away, but even in this state they refuse neither food nor drink; there is a severe cough, but the animals live for a long time; after complete emaciation death ensues.[179]

Fl. 400 A.D. Subsequent Latin medical writers merely confirm the evidence already presented. Theodorus Priscianus, who drew much of his material from Galen and Soranus, seems to regard consumption as so well known that he concerns himself mainly with the symptomatology of the disease, which consists in a characteristic fever that appears especially towards evening, and sometimes as a quotidian and then again as intermittent. Cough and consumption of the body is an invariable concomitant, and if this condition becomes chronic, recovery is hopeless; the physician must then content himself with an effort to console the patient in the manner of a friend. The high professional ethics and idealism comprehended in such an attitude of mind, it may not be altogether amiss to remark, is decidedly worthy of emulation.[180] In his therapeutics Priscianus had primarily had a view to building and recruiting the strength of the patient by the use of easily digestible meats, such as young doves, fish, brain of sheep and goats, and various soups; change of climate and country as well as long journeys is recommended." All these remedies I apply and I try by every method to see if, with the help of nature, I may be able in some measure to dry up the body already so completely intoxicated by catarrh." In extreme cases he would resort to cautery. That a consumptive state may invade a patient who has been seriously ill with some other disease was well known to Priscianus.[181]

Marcellus Empiricus, a contemporary of the former, deals mainly with remedial agents, and in this connection gives several formulae intended to relieve consumptive patients, but his medicines contain nothing new.[182]

Fl. 420 A.D. Caelius Aurelianus rivals Celsus in definite, clear, logical, presentation, particularly in his semiotic descriptions. φθίσις or φθόη is so-called because there is a wasting away of the body. Hemoptysis, chronic cough, and pulmonary ulceration are causes. The general physical characteristics agree with the material already discussed, but the enumeration of details is even more complete than that given by Celsus. He interestingly adds that "a wasting away of the body comes on which is more apparent when the limbs are uncovered, than from the appearance of the face."[183] Fever, bloody sputa, thick and bluish in color, subsequently leek-green, and finally white, full of pus that is either sweet or salty to the taste; hoarse voice, marked dyspnea, ruddy cheeks, other parts ash-colored; a faded expression in the eyes; crepitation in chest, perspiration, aversion to food, but excessive thirst; pains in lungs, ejection of fibrous matter from the lungs; weak and sluggish pulse resembling the creeping of ants; ends of fingers bent and claw-like; swelling of feet; alternations of heat and coldness in joints; pale nose; chilly feeling around the ears; as disease increases in violence whitish discharge from bowel; phlegm placed on burning coal gives off offensive odor like that of decayed flesh, and when thrown into water it coheres and sinks to the bottom at once. This latter test has persisted till modern times and can be found in up-to-date works on tuberculosis.[184]

Fl. 420 A.D. Vegetius gives us further evidence for the existence of bovine tuberculosis. He says that suppuration of the lungs is a serious disease in cattle, whence arise cough, emaciation, and finally consumption.[185] "Animals suffer with consumption just like men."[186] His semiotic description is in close agreement with Claudius Hermerus, whose work he undoubtedly had access to and also used. *Phthisicus* and *syntecticus* are words recurring several times in connection with chronic cough and cold.[187]

CONCLUSIONS

This chain of evidence may be safely interpreted in certain specific and well-defined conclusions:

1. Consumption was one of the most common diseases of Classical Antiquity.

2. The delineation of its ravages by both Greek and Roman writers as well as the conspicuous attention which is bestowed upon it in a general descriptive way bears testimony to a prevalence at least proportionately as great as in our own day; this statement becomes more significant when we consider that proper prophylactic measures were not understood.

3. The contagious and infectious aspect was quite generally observed and known, though not correctly understood.

4. Not only human but bovine consumption was recognized.

5. The hereditary transmission of consumption was a part of pathogenic belief of Hippocrates and probably of other physicians as well.

6. References to pulmonary consumption are most frequent; it would seem therefore that this form of tuberculosis was decidedly also most common.

7. Consumption of the hip-bone, of the larynx, of the kidneys, of the vertebrae and spinal marrow was so tabulated and recognized.

8. Tuberculosis of the lymphatic glands (scrofula), urogenital tuberculosis, tuberculous osteomyelitis, and tuberculosis of the intestine were ancient forms of tuberculosis, but were not so regarded by the Greeks and Romans. The consumptive condition of the body, however, is clearly mentioned in the inscription found near Smyrna (page 385).

9. Tubercles are mentioned by several ancient writers, a fact which we are to understand and not as having reference to the modern scientific theory of tuberculosis and its diagnosis, but as representing a visual acquaintance with the nodular elements of that disease.

10. The ancients had evolved a theory respecting the etiology, symptomatology, prognosis, diagnosis, and therapeutics of consumption agreeing in marked form with the modern pathology of the same malady.

11. Tuberculosis as the modern physician knows it was not an established fact, but the ancient consumption was without the

slightest doubt the result produced by the same phenomena.

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6. *Ibid.*, vi, 25, 57, 83; vii, 74, 76.
7. Job xvi, 8; xvii, 7; xix, 20; xxx, 22; xxxiii, 21; Psalms xxii, 17; cii, 5; cix, 23, 24; Isaiah, xxiv, 16.
8. Leviticus, xxvi, 13–16.
9. Deuteronomy, xxviii, 22.
10. Daniel, x, 17.
11. Isaiah, x, 16–23.
12. Zechariah, xiv, 12.
13. Odyssey, xi, 200–201.
14. Pollux, iv, 187.
15. *τηκεδών* idem quod *φθίσις*, tabes, non vero ut interpres, sanies.
16. Odyssey, v, 396.
17. Hippocrates (Littré), v, 434, 682; *cf.* also note *τοῖσι τετηκόσι = φθισικοῖσι.*
18. *Ibid.*, vii, 78.
19. Aristotle. Problemata, xxviii, 1.
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31. *Ibid.*, iv, 492; 504; 534.
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78. Rufus of Ephesus (Daremberg), 20.
79. Appian. De Bell. Civ., i, 107.
80. Artemidorus Daldianus, Bk. i, chap. xxi.
81. *Ibid.*, chap. xxxi.
82. *Ibid.*, chap. lxvi.
83. *Ibid.*, chap. lxxi.
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85. Lucian, Charon, 17.
86. Aristides (Dindorf), i, 312.
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103. *Ibid.*, XVI, 552, 553.
104. *Ibid.*, XIV, 365, 399, 506, 745; XV, 335; XVII, B, 666.
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106. *Ibid.*, XIII, 164.
107. *Ibid.*, XIV, 743.
108. *Ibid.*, XIII, 32, 52, 53, 65, 70, 71, 72, 86, 96, 98, 99, 101–105, 114, 164, 165, 267, 825; XIV, 35, 114, 152, 365, 443, 444, 506, 507, 569, 745.
109. *Ibid.*, XI, 751, 840, 861, 878; XII, 26, 36, 272; XIV, 9; XII, 590.
110. *Ibid.*, VIII, 247; XVIII, 505; VII, 922; VIII, 277, 284; XV, 834; VII, 853; XVIII, A, 494; V, 695.
111. *Ibid.*, X, 881; XIX, 443; VIII, 31; XVIII, A, 75 ff., 505; VII, 922 ff. XVIII, A, 99.

   Note: It is interesting to compare Hipp. IV, 498: *χοιράδεδ καὶ τᾰλλσ φύματα* scrofulous swellings and other tubercles with Galen V, 695: *χοιράδες, στραγγουρίαι, καὶ, τᾰλλα, φύματα.* Possibly tuberculosis of the lymph glands. But *cf.* Virchow, *op. cit.* 22.
112. Moschion (Dewez), Greek text p. 91; Latin text, p. 202.
113. Pausanias, X, 24.
114. *Ibid.*, V, 26.
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117. Diogenes Laertius, VI, 19.
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119. Philostratus, I, 6: *cf.* bitter water of ordeal for adultery, Numbers, 11–31.
120. *Ibid.*, I, 36.
121. *Ibid.*, *περὶ γυμναστικῆδ* XIV, XV.
122. Phrynichus. In Bekker, Anecdora Graeca, 71.
123. Oribasius, Syn. 8, 51; 9, 21. Causes and therapeutics (Bussemaker et Daremberg), Bk. IV, 55, 55; V, 469–471; VI, 275–277.
124. Hesychius II, 1379, 1382; *cf.* Homer, Odessey, XI, 202. and Aretaeus, *Op. cit.*, Bk. I, 14: *ἡ φθίσις καὶ τοῦ σκήνεος τηκεδῶν ἐπιγίγνεται* (or phthisis and consumption of the body supervene).
125. Suidas, II, 1099; *cf.* 4.
126. Dennis, G. Cities and Cemeteries of Etruria. II, 97 ff. *Cf.* Pausanias, 38.
127. Platus Fragmenta. (Delphin) I, 84; the word here used for "consumption" is "tussis."
128. Plautus Rudens, line 511.
129. Lucretius IV, 1166 ff.: iam mortua tussi.
130. *Ibid.*, VI, 1201: hunc tabes letumque manebat.
131. Cicero, De Natura Deorum. III, 35: misero diuturnoque morbo tabescentem interemit.
132. Propertius, IV, 5: Vidi ego rugoso tussim concrescere collo, sputaque per dentes ire cruenta cavos, atque animam in tegetes purem exspirare paternas horruit algenti pergula curta foco exsequiae fuerant rari furtiva capilli vincula et immundo pallida mitra situ, et canis in nostros nimis experrecta dolores, cum fallenda meo pollice clatra forent.
133. Horace, Satyrae. I, 9, 32: tussis.
134. *Ibid.* II, 5, 106: si quis forte coheredum senior male tussiet.
135. Vitruvius, XXIV, 15: gravitudo arteriace, tussis, pleuritis, pthisis, sanguinis eiectio.
136. *Ibid.* LX, 21: resinam quae etiam medetur pthisicis.
137. Manilius, Astronomicon, I, 880.
138. Ovid, Metamorphoses, II, 807.
139. Livy, VII, 22.
140. Seneca, Epistolae, 78, 1–2.
141. *Ibid.*, 75, 12: sicut destillation una nec adhuc in morem adducta tussim facti, adsidua et vetus phthisin.
142. *Ibid.*, 91, 5: invadit temperantissimos morbus, validissimos phthisis.
143. *Ibid.*, 78: Such expressions as "ad summam maciem deductus" and "destillationes et vim continuae tussis egerentem viscerum partes." *Cf.* interesting article in *Abband. d. k. Gesellscb. d. Wiss. z. Goetting.*, 1877, XXII.
144. For the latest theory respecting the "De Medicina" of Celsus *cf.* A. Cornelii Celsi quae supersunt: recensuit Fredericus Marx. Leipz., 1915. In the Prolegomena he attempts to prove that it is a translation of the Greek treatise of T. Aufidius Siculus.
145. Celsus De Medicina. III, chap. XXII.
146. *Ibid.*, IV, 22; V, 28; II, V, 17, 16 ff.; V, 18, 9.
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148. Columella De Re Rustica. VI, 14, 1.
149. *Ibid.*, VII 5, 14; 10, 7.
150. Petroius Satirae 64: cantando paene tisicius factus sum.
151. *Ibid.*, 117.
152. Caelius Sabinus, 144, Iurisprud. Anteiust. *cf.* Gellius, IV, 2, and Corpus Iuris, Lib. XXI, t. I, I.I.
153. Pliny Elder, 26, 7, 21, #38.
154. *Ibid.*, 23, 8, 80, #154.
155. *Ibid.*, 26, 110; 22, 152.
156. *Ibid.*, 25, 53; in Arcadia bubulum biberent phthisici, syntectici, cachectae; 28, 129.
157. *Ibid.*, 31, 6, 33, #62.
158. *Ibid.* 28, 8, 24, #88.
159. *Ibid.*, 22, 25, 61, #120.
160. Galen, XV, 455.
161. Pliny, 3, 28, 17, 67, #230 ff.
162. Bostock and Riley suggest that this is an instance of smoking, though not a tempting one.
163. Quintilian Declamationes, V, 15: penitus visceribus immissa tabes quotidie aliquid ex homine praemittit in mortem.
164. Pliny Younger, Bk. VII, Ep. 19: insident febres, tussis increscit, summa macies, summa defectio.
165. *Cf.* Aristotle, Problemata. VII, 8: in this passage fever is not regarded as generally contagious.
166. Martial, II, 26: quod querulum spirat, quod acerbum Naevia tussit, inque tios mittit sputa subinde sinus, iam te rem factam, Bithynice, credis habere? Erras: blanditur Naevia, non moritur.

   Note: If the reader will pardon the slang, we may suggest that "she is kidding you" instead of "she is flattering you" is decidedly more in accord with the spirit of the original.
167. *Ibid.*, V, 39.
168. *Ibid.*, XI, 21, 7: de pthisico cinaedo.
169. Juvenal, XIII, 95: phthisis et vomicae putres.
170. Hadrianus. Scriptores Historiae Augustae I, 23. *Cf.* Aurelius Victor.

171. Firm. Matern. Mathes. III, 30; VII, 9, 5; VII, 21, 5; VII, 23, 4; III, 2, 13; 2, 24; 7, 15; IV, 9, 9; 16, 11; V, 6, 2; 6, 10; VIII, 27, 10.
172. Frag. Vatic. (Teubner), fr. 130, 740.
173. Aurelius Victor De Caesaribus, XV, 12.
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175. *Ibid.*, XLII, 21.
176. Prudentius Hymn II, 1, 154.
177. Claudius Hermerus. Mulomedicina (Oder), 47, 48.
178. *Ibid.* 124 chap. I.
179. *Ibid.*, 53, 1. 24.
180. Theodorus Priscianus. Bk. II, 8.
181. *Ibid.*, 11.
182. Marcellus Empiricus, c. 23, c. 16.
183. Caelius Aurelianus. De Morb. Chron. Bk. II, 14: corporis tenuitas sequitur, quae nudatis membris proditur magis, quam ex aspectu vultus.
184. *Ibid.*, 14; Bk. III, chap. vi, vii; Bk. v, chap. i ff.
185. Vegetius Artis Veterinariae. IV, 13: est etiam gravis pernicies, cum pulmones exulcerantur; unde tussis et macies, ad ultimum vero phthisis invadit.
186. *Ibid.*, V, 54: syntexin animalia patiumtur ut homines.
187. *Ibid.*, II, 10; V, 64.

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THE TREATMENT OF THE WOUNDS OF THE ABDOMEN IN ANCIENT TIMES

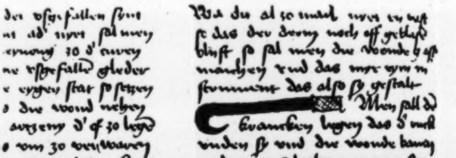
By J. G. DE LINT

THE HAGUE, HOLLAND

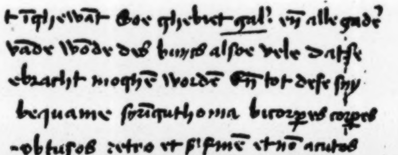
WOUNDS of the abdomen in antiquity were no rarity, as fighting hand to hand was the usual thing in those days. So it is not to be wondered at that the old writers on surgery discussed the treatment of those wounds. Hippocrates says in his aphorism (VI, 58): "the omentum, protruding from a penetrating wound of the abdominal wall, mortifies imperatively." Celsus points emphatically to the color of the protruding intestines: If they are bluish, colorless or blackish all treatment is useless. If the color of the intestines is still normal, one must replace them as soon as possible because contact with the air quickly mortifies them. Before replacing them, however, one must be sure they are not wounded. Only wounds of the large intestines can be sewn up; with wounds of the small intestines sewing is not crowned with success. Celsus does not describe his method of sewing the intestines. He recommends putting the patient on his back and at the same time elevating the pelvis. If the wound is too small to allow replacing the intestines in the abdomen "incidendum est, donec satis pateat." If the intestines are already desiccated, they must first be be cleaned with water and oil. An assistant must be told to hold asunder the edges of the wound with his hands or with two hooks and it is emphatically recommended that he shall not forget to take hold of the peritoneum also. The intestines being brought back, the patient must be shaken. In this way all organs resume their normal place. If the omentum has not its normal color, it must be cut off with a pair of scissors. If it is quite normal, it must be put over the intestines. Then the moment has come to take care of the external wound. Celsus tells us it is not sufficient to join the muscles and the skin or only the peritoneum, but both parts must be sewn up. He uses two threads, both put in a needle, the physician holding a needle in each hand. Beginning at one of the corners of the wound, first the peritoneum is sewn up in this manner: the right hand needle pierces the left peritoneum edge and the left hand one the right peritoneum edge. After that the surgeon changes the needles for the second suture and so on for every following suture in order always to have the blunt side of the needle turned toward the intestines. Arriving at the other corner of the wound the same manner of sewing is used for the muscles and the skin, but here too the needle always pierces them from the inside outwards. A bandage of wool or cotton, soaked in vinegar, is put over the wound.

Galen treats on the penetrating wounds of the abdomen in the last chapter of the sixth book of his "Methodus medendi." He mentions that the intestines, pressed out of the abdomen, swell if they are not directly returned. One can try to shrink them by putting linen with water and wine on them, but if it does not succeed, the wound must be dilated by the fistula-knife, συριγγόῑομα. He warns not to make use of a knife cutting at both sides nor of the common sharp scalpel. In sewing the wound of the abdomen an assistant must take care that the intestines are guarded from the needles. The patient must be laid on the side opposite the wound. Galen advises sewing up the wound of the abdomen by taking skin, muscles and peritoneum in the same suture, with little distances between the sutures. After the operation the whole body is rolled up in wool soaked in hot oil.

The chapter on the wounds of the abdomen in the book of Albucasis is full of details and Gurlt thinks much of his advice is based on personal experience. His inspection of the wound is couched nearly in the same terms as those of Galen. If all attempts to bring back the prolapsed intestines fail, the wound must be widened: "cum instrumento quo secant emorroydes." The assistant must bring the edges of the wound together and offer them to the surgeon for sewing. For suturing the wound in the abdomen, Albucasis advises to take needles neither too large nor too small. Without providing them with threads they are stuck through skin, muscles and peritoneum on both sides. A loose thread is wrapped round each needle in the form of an eight. As soon as the wound is closed the points of the needles must be cut off, so that there is no possibility of the patient hurting himself during his sleep.



MANUSCRIPT. METZ. 176.



MANUSCRIPT. HAGUE. IOC. 17.

The second method is executed by piercing through the three layers at both sides and directly afterwards doing the same in the opposite direction, with the result that both the extremities of the thread lie on the same side of the wound, where they are tied. Albucasis tells about a man wounded by a knife in the abdomen. He put the above-mentioned method of suturing into practice notwithstanding that the intestines had been out of the abdomen nearly twenty-four hours. The man recovered and lived several years, perfectly able to do his daily work. Another method recommended by Albucasis is executed by first perforating muscles and skin of one side, withdrawing the needle, sewing the two sides of the peritoneum and thereupon perforating muscles and skin of the other side.

According to Albucasis the jejunum cannot be sutured on account of its multitude of blood vessels. The colon can be sewn up by the heads of ants. (A particular kind of ants with big heads is used for this purpose.) Albucasis' text reads: "Deinde aggrega duo labia vulneris et pone fornicam unam ex eis que habebant os apertum super duo labia vulneris." As soon as the ant has closed its mouth, the head is cut off and it rests attached to the wound. Immediately afterwards a second ant is used for the following suture and so on till the whole wound is closed. Then a suture must be placed over the heads of the ants. This method was not new, Susruta mentioned it in his Ayurveda (Chap. XIV), recommending the heads of red ants for suturing wounds of the intestines. During the war between the Greeks and the Turks in the year 1821 Turkish surgeons still followed this method.[1]

Let us now examine what Paul of Aegina says on this subject. He says in his sixth book (Chap. LII) that he has borrowed his description from Galen. But his text does not agree with that of Galen. Paul perforates skin and muscles, omits the peritoneum on this side, takes the opposite peritoneum together with muscles and skin of that side, turns the needle, perforates for the second time skin and muscles but passes over the peritoneum on that side and takes it in the needle together with the muscles and the skin of the first wound-edge. This brings both ends of the thread at the same side of the wound, where they are knotted together. A second method consists in perforating the muscles and the skin, drawing out the needle, turning the needle and sewing both parts of the peritoneum from out in, turning the needle again and taking up in the suture the muscles and skin of the other side. The most usual suture is that which takes all the layers at the same time.

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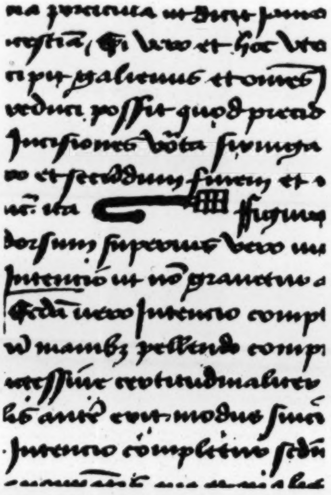
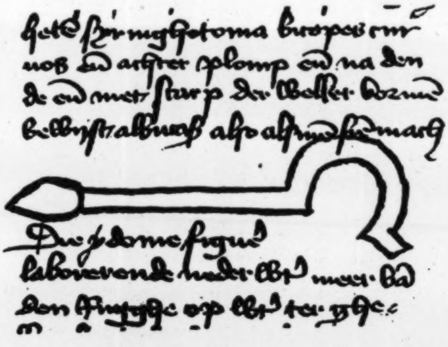
[1] Gurlt, E. J. Geschichteder Chirurgie. Berl., 1898, I, 97.



MANUSCRIPT B. BIBL. NAT. 17846. PARIS.

In the year 1366 the "Chirurgia Magna" by Guy de Chauliac was published, a work which during several centuries was a standard on surgery. He also treats of the wounds of the abdomen and he does it in a much more detailed manner than any of his predecessors, summarizing all that had been previously written. Guy begins by dividing the wounds of the abdomen into two kinds: those which perforate the abdominal wall and those which do not. This can be examined with a *prouvette,* a sound. If the intestines are wounded their contents come out of the wound. If the wound is above the umbilicus, the jejunum is hurt; under the umbilicus the large intestine is wounded. He learned from Galen to replace the protruding intestines as soon as possible, because they fade and swell very soon on being exposed to the air. Wounds in the small intestine cannot be cured, only those in the large intestines. Speaking of suturing the wounds of the abdomen, Guy mentions in the first place the suture according to Galen taking the *Siphac* (peritoneum) as well as the *Mirach* (muscles) in the same suture. Evidently Guy did not read this part of the works of Galen but consulted Paul of Aegina. He quotes the latter almost literally in his description of how to manipulate the needle while suturing, following the method Paul describes as Galen's, as we have already seen. The second method mentioned by Guy, also according to Galen, takes all the different layers in the same suture. In the third place he mentions the method of Albucasis with the wrapped-up needles. Thereupon he enumerates a method that has been wrongly ascribed to Lanfranc and Henricus, as Albucasis had already described it as his second manner of suturing. Guy says that this method has the advantage that both the ends of the thread are coming at the same side of the wound and no suture needs to cross the edges of the wound.



MANUSCRIPT. UTRECHT. 1356.

If there is a perforating wound of the abdomen one must first sew up the wounds in the intestine before closing the external wound. Guy recommends the suture used by the furriers and disapproves of that with the heads of ants. Rogerius and Theodoricus were accustomed to put a pipe of elder-wood in the intestine and to suture across it in order to protect the wound on the inside from touching the contents of the intestine. Other surgeons use for the same purpose pieces of the larynx of an animal. Guy does not agree with this, saying "nature expells all that is strange to her and by this way one does not attain the proposed purpose." If the intestine has become partly blackish, one must tie the whole blackish part with a strong string and this string must be left protruding from one corner of the wound in order that the dead part of the intestine can be more easily pushed out at this place. It is impossible to understand the manner in which Guy manages when a circular part of the intestine is atrophied.

As soon as the wound in the intestine is provided for, the external wound must be closed, because "Nothing is more dangerous for the intestine than the contact with the air because in this way pain is caused and then also shrinking of the intestine and spasms, after which death follows." Although infection was unknown, those early surgeons had already noted that the contact with the air could have bad consequences, a proof of their accuracy in observing symptoms. Guy says the non-closing of the wounds of the abdomen is "singularly inconvenient and perilous by the protruding of the intestines."

If one does not succeed in bringing back the protruding intestines Guy de Chauliac advises to try diminishing them by means of linen soaked in water and wine, just as Galen had advised. In this connection he mentions Hali Abbas, who would have taken the patient by his hands and his feet, holding him in a bath while furiously shaking him or wetting the intestines with hot lard of a pig. If one has taken the necessary precautions without success, Guy advises widening the wound with the syringotoma. This knife, also named by Albucasis, is not sharp at the edges, has not a sharp point and should be curved at the end.

There exist four manuscripts by Guy de Chauliac with drawings of this instrument: in the manuscript at Metz (No. 176) as well as in that at the Museum Meermanno-Westreenianum at the Hague (No. 10 C 17) and in the Latin Manuscript (No. 17846) in the Bibliothèque Nationale in Paris, the syringotoma is represented with a short square handle and a long blade, curved at the end. But this instrument is quite different from those represented in the same manuscripts for cutting a fistula. The latter bears a projecting part in the middle of the knife. This projecting part is characteristic of the fistula-knife, because it is intended to contain all the tissues that must be cut through between this protuberance and the curved end of the knife. It is missing in the syringotoma. A third drawing is to be found in a manuscript at the library of the University of Utrecht (No. 1356). Here too the protuberance at the side of the instrument is missing. The blade itself has a somewhat different form: it is curved in the form of a crescent and the extreme end bears another small, obtuse-angled protuberance to prevent the intestine from being hurt. Guy used thus a special instrument, constructed especially for this purpose, and as far as my cursory examination of the medical manuscripts disclosed, it is only to be found in the "Chirurgia Magna" by Guy de Chauliac. The instrument represented in the chapter on the wounds of the abdomen by Albucasis is exactly the same instrument as that represented in the edition of his works of the year 1504 in the chapter on the fistula ani. Albucasis calls it the fistula-knife and so it is evident that he did not use a special instrument for widening wounds in the abdomen.

Finally I will mention that Guy, while operating on wounds of the abdomen, very rationally advises to have always at one's disposition an assistant, who takes both the edges of the wound with his hands, raises them outwards and offers the edges to the surgeon for every suture.

In the Middle Ages surgery attained its culmination in Guy de Chauliac and during many centuries his book was the *vademecum* for later generations. From this article it appears clearly that Guy de Chauliac formed an accurate idea of what his predecessors had written on the treatment of wounds of the abdomen, completed this knowledge from his own experience, and formulated it in stationary rules.

[From Redi: Sonetti. Firenze, 1702.]

REPRESENTATIONS IN THE UTRECHT MANUSCRIPT OF GUY DE CHAULIAC OF INSTRUMENTS FOR THE REDUCTION OF THE UVULA

By J. G. DE LINT

THE HAGUE, HOLLAND

GUY De Chauliac has written in his "Inventorium seu Collectorium artis chirurgicalis" a chapter on the uvula. In Chapter x of a Chauliac manuscript, numbered 1356, in the library of the University of Utrecht there are some drawings that are not to be found in any of the other fifty-nine Chauliac manuscripts. They are representations of instruments for cutting off a portion of the uvula.

The ancient Greek physicians and philosophers called the normal uvula κίων καὶ γαργαρεών. Chauliac says:

> Galen told us that one can see in the supreme part of the throat when opening the mouth as far as possible and after pressing down the tongue, a fleshy membrane, called by the Greek kioon or kionis and that means Columna or columella. Alexander Aphrodisiacus, a contemporary of Galen, calls it "gargar."

According to Hyrtl this word takes its origin from the noise one makes by gargling. In Arabian it can be recognized as "*Ghargbara*" and in Hebrew as "*gargareth.*"

Aristoteles calls the inflamed tumefaction of the uvula σταφυλὺ (grape). Rufus of Ephesus clearly states: "Uvam non partem, sed affectionum nominari opportet," Paul of Aegina makes a difference between two kinds of enlargement of the uvula: if it is long and small it is called a pillar, κίων, if, on the contrary, it is big and round, he speaks of the grape, σταφυλὺ. In the writings of Aretaeus the same distinction is made between the κίων and the σταφυλὺ as in those of Paul of Aegina, but a third form of the inflamed uvula is added; when it ends in a long, thin skein, looking like the point of a lance, he calls it το κράσπεδον. Cornelius Celsus uses the word uva, speaking of the uvula. The fourteenth chapter of the sixth book of his "De medicina libri octo" treats with: "De uvae morbo," Guy de Chauliac speaks of uvula: "not taking the name from the substance but from the disease, having likeness with a grape. Because uvula is a disease, identical with a grape, namely a thickness at the end of the columna with a thinness at the root of it and it hinders in breathing and in swallowing. However, it is very rare in the front of the columella, but it is often inflamed." Guy uses here the diminutive of the word uva and I believe he does it purposely because there is a great difference between the size of a grape and the swollen uvula. Hyrtl thinks Vesling first used the word uvula, which would have been three centuries earlier. Rufus of Ephesus had already spoken of the κιουὶs in the diminutive, a word afterwards adopted by Vesalius in his columella.

Guy tells us that enlargement of the uvula, takes its rise from "a hot or a cold substance, sinking down from the brain in the way of a fluxion." Paul of Aegina also says that the uvula is often the victim of the flowing down of the phlegm from the brain. Supposing this to be the origin of the enlargement of the uvula and a rational therapeutic treatment being directed in the first place to the removal of the origin, they began with general remedies such as blood-letting and purging. Guy tells us the effect is a desiccation of the phlegm and a shortening and rising of the uvula. He quotes Rogerius, who advised for children: "To put on the top of the head a piece of scarlet material as large as a penny, adding some peck, thus and mastic." Mesue, according to Guy, recommends for adults:

"to draw out the hair of the head till the skin is loosened or to cauterize the top of the head."

Besides these a local treatment was applied in the form of astringents, averting and dividing remedies. Guy enumerates the following remedies: gargling with rose-water and vinegar if the substance is hot (according to Rhazes) or one can press the uvula in a spoon filled with a powder of roses, sandalwood and camphor. On the contrary if the uvula is cold, one must gargle with alum, *syrupum acetosum, sinapim* and *sal ammoniacum.* Rogerius recommends a gargling with cinnamon, pepper, gall-nuts and balaustics. Galen advises if the uvula is relaxed and hangs slowly in the throat using a receipt originating from Aesculapius with pieces of dried nests of wild swallows and unripe gall-nuts, which must be blown in the form of a powder through a little pipe against the swollen uvula.

If none of these remedies give relief, one must have recourse to an operation. In the old literature operation upon the uvula is mentioned several times. In Prognosticon 23 Hippocrates permits the cutting-off of the uvula only when its end is swollen like a grape, σταφυλὺ, and when the other part has its normal form. The text of Celsus reads: "Si vero inflammatio vuidem nulla est, nihilominus autem ea ultra justum modum a pituita deducta est, et tenuis, acuta, alba est, praecidi debet: itemque, si ima, livida et crassa; summa tenuis est. Neque quidquam commodius est, quam vulsella prehendere, sub eaque, quod volumus, excidere."[1] Hippocrates and Celsus demand the same indication for operating, which is exactly stipulated by the latter, but neither of them gives a more precise description of the manner of operating.

Guy de Chauliac tells us there are three methods of operating on the swollen uvula. The first method originates from Albucasis: "The patient must sit in the sun before the physician, he opens his mouth, the tongue is pushed down with a spatula, made for this purpose, and the physician snatches the uvula with a hook and cuts it off with a pair of scissors, blunt at the front or with a knife in the form of a scythe." After the removal of a piece of the uvula, one must gargle with water, in which are put gall-nuts, alum or sulphuric acid. If this is not sufficient to staunch the bleeding, blood-letting in the neck is recommended. Avicenna advises the patient to keep the head bent forward so that no blood can run in the throat. Paul of Aegina has been far more accurate than Guy as far as the indications for this operation are concerned. He says: "It is not permitted to operate on the uvula when it is contracted, round, not very long, bloody and looking blackish; on the contrary one must take the knife when the uvula is long, thin, with the point looking like the tail of a mouse, flexible, not very bloody but whitish." He warns emphatically to cut away only that part of the uvula which makes this organ longer and larger than normally. Otherwise dumbness can be the result. Roger of Salerno holds the same opinion, writing in the year 1180: "cave tamen, ne radicem uvulae tangas."

In his Επιτομῦs ἰατηικῦs βιβλία ἔητα, Paul of Aegina calls the knife he uses for this operation σταφυλοτόμοs. In the Utrecht MS. 1359 the instruments necessary for this treatment are reproduced on page 220. In the first place there is a drawing of the hook, an instrument furnished with a solid handle, rather long and turned up at the end. Next to it the knife is represented. It has also a very solid handle with a large reaping-hook terminal and at the inner side a row of teeth like a saw. Paul does not advise the use of the knife if the patient is very anxious or if he is afraid of the sight of blood. In this case one must cauterize the uvula. He invented for this purpose an instrument he calls the σταφυλόκαυστοs. It is provided with a cavity for the causticum. An assistant pushes down the tongue with a spatula, the physician opens the instrument as far as is necessary and pushes the uvula into the aperture. The causticum must have a good consistency, not too liquid, for then it could drop from the uvula and hurt the tongue and not too dry so that it can attach itself solidly to the uvula. This treatment lasts an hour and the patient is compelled during this time to refrain from drinking and to sit with head foremost so that the saliva can flow out of his mouth. The third or fourth day after the treatment the dead part of the uvula falls down. After the cauterization the medicament is removed from the uvula by the finger enveloped with wool. The patient gargles with an infusion of camomile and compresses of the same are laid around his neck.

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[1] Lib. VII. Chap. xii, 3.

Guy also mentions this treatment and says that Albucasis uses nitric acid or another strong medicament, made from slaked lime, soap or arsenic, dissolved in liquid. It must be applied on the uvula for half an hour and afterwards one must gargle with rose-water. Avicenna says that the cauterized part falls down the third day. Albucasis represents the instrument used by him; unfortunately he does not describe it. He writes only: "cuis hoc est forma." At one side it has been scooped out in the form of a spoon and in this hollow one brings the causticum: "pone instrumentum cum medicina super uvulam ipsam" Guy uses the instrument of mesue: "One must have a little pipe, in which at one side is a hole or window, in which the uvula is put." After having caught the uvula in the hole, a *prouvette* (probe) is put in the pipe, enveloped at the end with wool or cotton, saturated with the medicament. This last instrument was used by Guy de Chauliac for still another manner of treatment of the swollen uvula: "One can also put a red-hot iron through the pipe, made in the form of a chisel or scalyrum and while cauterizing cut off the uvula." There is a representation of the instrument in the Utrecht manuscript. The pipe is here open at both ends, which are joined by little cross-stakes. The knife has a solid handle, it fits like a piston in a pump. It is sharp at the front and has the form of a chisel so that the uvula, locked up in the hole, is easily cut off.

Sudhoff published some years ago a drawing of an "instrumentum ad uvulam incidendum," that he found in a manuscript of the end of the twelfth century which treated of the surgery of Roger of Salerno. He describes it as a kind of guillotine and the letterpress runs: "incidatur cum foricibus ad hoc factis iuxta palatum in subtiliori loco." At the end of the pipe there is a round hole for the uvula; the knife is provided with a double handle and slides into the pipe like a piston in a pump. This instrument must be considered as the forerunner of the present tonsillotome. These were the only representations in any of the manuscripts I could find.

Guy de Chauliac tells us that the instrument as well as the method originates from Mesue, but he does not mention from which Mesue. There are several persons with the same name, known in the history of medicine, Mesue, the younger, called "pharmacopaeorum Evangelista," wrote principally on remedies. So it is not probable he was the inventor of the method. Mesue the elder was director of the hospital at Bagdad. He left various studies on anatomy, diet, physics, ophthalmics, etc. As far as I know he has not mentioned the operative treatment of the uvula. A third Mesue remains, a man who wrote a compilatory of surgery. He lived in the thirteenth century. Perhaps this is the man referred to by Guy de Chauliac.

We can conclude that the oldest source for this manner of treatment must be attributed to Roger of Salerno, who wrote his "Practica Chirurgica" in the year 1180.

EDITORIALS

EMILE LITTRÉ(1800–1881)

Probably few men in modern times have possessed more profound erudition or made better use of it than the great French scholar whose momumental Dictionary is the classic of his language and time as that of Johnson was of his. Even this does not overshadow his fame as an exponent of positivist philosophy and as a classical scholar and historian. A recent issue of *Isis*[1] contains an admirable study of Littré and his work by L. Guinet, in which the significance of his life and labors is fully treated along with a sympathetic record of his personality. It is well that our profession should be better informed about the life and work of one who did us such great service. Maximilien Paul Emile Littré was born at Paris on February 1, 1801, of a family imbued with the most ardent devotion to the Jacobin party. After graduating from the Lycée Louis, le-Grand Littré studied medicine, Years afterwards he wrote:

> I have written much on medicine, articles in the journals and dictionaries, a monograph on cholera, an edition of Hippocrates and have lived ten years in hospitals as interne and externe, following with assiduity the work of Monsieur Rayer, nevertheless I have never passed any examination nor have I any medical degree, I am not a physician.

In 1858, because of his medical writings, he was elected an Associate of the Academy of Medicine. He seems to have recoiled from the idea of entering upon practice partly because of the expense, although several of his friends offered to furnish him with the necessary funds. He preferred to earn his living as a teacher of languages and mathematics, all the while pursuing his studies in the ancient tongues, including Sanskrit and other Oriental languages. He fought valiantly against the monarchy in the glorious days of July, 1830. During the next decade Littré engaged in editorial work on a number of different periodicals. In 1839 he published the first volume of his great edition of Hippocrates and the following year was elected a member of the Academy of Inscriptions and Belles Lettres. Littré was induced to undertake his Hippocrates by Rayer and Andral. This monumental work, containing a most carefully collated Greek test with a translation into French, accompanied by copious notes, remains the most scholarly edition of the Hippocratic writings. The final volume was not completed until 1869.

Not satisfied with having undertaken this labor in addition to his constant writing for periodical literature, Littré began in 1841 the collection of material for his "Dictionnaire Française." By his numerous writings on linguistic subjects he had already a very high reputation as an etymologist and comparative philologist, and no man could have been better fitted for the great labor he undertook. For thirty years Littré worked unceasingly at his task. When it was practically finished in 1871 he was elected to the Académie Française. Eight years before his candidacy had failed because of the furious opposition of Dupanloup, the Bishop of Orleans. This time when he was successful Dupanloup resigned his own seat as a protest. Littré's moral character was of the best. The opposition of this distinguished ecclesiastic arose from the zeal with which Littré had written against the clerical reaction and because of his prominence as the foremost exponent of the philosophy of August Comte. Littré's last publication in 1850 was an article on positive philosophy which he entitled "For the last time," in which he once more expressed his anticlerical convictions. It is sad to relate that during his last hours, when he could offer no resistance, his family had him baptised and he was buried with the rites of the Catholic Church, although he had expressly requested that no services should be held at his tomb. This was a poor return for the respect with which Littré had always treated the religious views of his wife and daughter in previous years. The disinterestedness of Littré's character is attested in many instances. Although he was active in public affairs during and just after the Revolution of 1848, he refused the position as Minister of Public Instruction under the new Republic, and when he had succeeded in having a chair of the history of medicine created at the College of France by his personal influence with Duruy, the minister of Public Instruction, he refused to accept the appointment for himself but had it given to Daremberg.

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[1] *Isis*, Feb., 1926, vii, No. 25.

When Pasteur succeeded him at the Acadèmie Française, in pronouncing the customary elegy on his predecessor he termed him "a lay saint," and Haureau, writing a few years later, spoke of him as a "holy man." Caro, who had been one of his opponents during his life, wrote of Littré, a year after the latter's death, that he was "one of the most beautiful examples of human nature, one of the types in which stand out the highest morality, absolute sincerity and the greatest endeavor of an active, well-regulated and productive mind."

FRANCIS R. PACKARD.

OSLER AND BURTON'S "ANATOMY OF MELANCHOLY"

What the late Sir William Osler did to revive and stimulate interest in Sir Thomas Browne and the "Religio Medici" is too well known to require more than an allusion. That he was also deeply interested in the resuscitation of another great sixteenth century author is not such common knowledge. Robert Burton, although not a physician, wrote a book on what we would nowadays term psychology, or possibly mental diseases, which is a perfect mine of erudition bearing upon the follies and passions of mankind and the mental disturbances incident thereto. Osler's familiarity with Burton's book is repeatedly attested by his numerous references to it and by the address which he delivered at Yale in 1913. We have lately received a copy of Volume One, Part III, of the *Proceedings of the Oxford Bibliographical Society* for 1925, which contains a number of papers dealing with Burton and among them several delightful contributions written by Osler. Before considering the latter it is well to mention the other articles contained in the volume as they are of the greatest importance to all students of Burton. They include "Notes on the Bibliography of the Oxford Editions of the Anatomy," by Edward Gordon Duff and F. Madan; "Some Alterations and Errors in Successive Editions of the Anatomy," by Professor Edward Bensly; "Burtoniana," under which we find a short consideration of "Burton as a Transmuter," by Osler, Burton's will, and some specimens of "Imitations of Burton" by Charles Lamb. Lastly there are lists of the books in Burton's library which he bequeathed to the Bodleian and Christ Church libraries. These lists have been compiled and edited by S. Gibson and F. R. D. Needham. It should be stated that there is in contemplation the publication of a final edition of the Anatomy, by the Clarendon Press, under the editorship of Professor Bensly, with whose name will appear that of the late Dr. W. Aldis Wright, who had collected much material on the subject which will be utilized by Professor Bensly. Mr. Madan states: "It is known that Sir William Osler had much at heart a plan for annotating some such edition as is contemplated, and basing it on a collation of the first six editions, with the help of a committee of friends." It is gratifying to feel that once more the memory of Osler will be embalmed in the English literature which he so greatly loved.

Let us now briefly review his contributions to the present volume. The first is a tripartite article entitled "Robert Burton, the Man, the Book, his Library." Mr. Madan states the original manuscripts of all three divisions are in the Osler Library and have been used by permission of Lady Osler. The first two were fused into one and delivered, with some omissions, at Yale, being afterwards reprinted in the *Yale Review* of January, 1914. The part dealing with Burton's library was read before the London Bibliographical Society and a summary of it printed in its *Transactions.* By combining the papers "the threefold Essay at last appears in its full form and proper proportions."

From the slender material concerning the life of Burton, Osler builds up a charming picture of the recluse divine, who although he never travelled was devoted to the study of cosmography, and remaining a secluded bachelor and a clergyman wrote "the most elaborate treatise on love that has ever been written." Osler quotes the following happily drawn description of him by Wood:

> He was an exact mathematician, a curious calculator of nativities, a general read scholar, a thro' pac'd philologist, and one that understood the surveying of lands well. As he was by many accounted a severe student, a devourer of authors, a melancholy and humorous person; so by others who knew him well, a person of great honesty, plain dealing, and charity. I have heard some of the antients of Christ Church often say, that his company was very merry, facete and juvenile; and no man in his time did surpass him for his ready and dextrous interlarding his common discourses among them with verses from the poets, or sentences from classic authors; which being then all the fashion in the University, made his company more acceptable.

However, when he was in one of his spells of melancholy "nothing could make him laugh but going to the bridge-foot and hearing the ribaldry of the bargemen, which rarely failed to throw him into a violent fit of laughter."

Burton came of an excellent Leicestershire family and had ample means to supply his wants, which were chiefly books. His death on January 25, 1639–1640, so nearly coincided with the date anticipated by his horoscope as calculated by himself that there were some who insinuated that he had made away with himself rather than be convicted of an error in such a matter.

Such was the man. In 1621 he published his "Anatomy of Melancholy," and four more editions were published during his lifetime, and a sixth, with alterations and corrections made by him, appeared eleven years later. Osler's analysis of the book is splendid and should be read in full by anyone who contemplates a study of Burton. Let us close with his summary view of the contents of the Anatomy:

> . . . in whose pages, as in no other book, sweeps before us the panorama of humanity: Kings and Queens in their greatness and in their glory, in their madness and in their despair; generals and conquerors with their ambitions and their activities; the Princes of the Church in their pride and in their shame; philosophers of all ages, now rejoicing in their power of intellect, and again grovelling before the idols of the tribe; the heroes of the race who have fought the battle of the oppressed in all lands; criminals small and great, from the petty thief to Nero with his unspeakable atrocities; the great navigators and explorers with whom he travelled so much in map and card, and whose stories were his delight; the martyrs and the virgins of all religions, the deluded and the fanatics of all theologies; the possessed of devils and the possessed of God; the beauties, frail and faithful, the Helens and the Lucretias, all are there; the lovers old and young; the fools who were accounted wise, and the wise who were really fools; the madmen of all history, to anatomize whom is the special object of the book; the world itself, against which he brings a railing accusation—the motley procession of humanity sweeps before us on his stage, a fantastic but fascinating medley at which Burton hesitates whether to weep or to laugh—"Fleat Heraclitus, an rideat Democritus?"

SIXTH INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE

The Sixth International Congress of the History of Medicine was held at Leiden and Amsterdam from July 18 to July 23, under the presidency of Dr. J. G. deLint of the Hague. The sessions of the first three days were held at Leiden in the old Academy building on the Rapenburg, those of the next two days at the University at Amsterdam and on the last day an excursion was made by steamer on the Zuider Zee to Enkhuizen and Volendam. The following eighteen countries were represented: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Great Britain, Hungary, Italy, Morocco, the Netherlands, Poland, Roumania, Spain, Sweden, Switzerland and the United States, an increase of 5 per cent over the previous Congress. The presence of several members from Germany, a country that is admittedly one of the leaders in the pursuit of this subject, gave a truly international character to the meeting and the most cordial relations were exhibited throughout. At Leiden especially, so rich in medical memories, with the spirit of Boerhaave pervading the scene, the ensemble was delightful. The other officers of the Congress were: Dr. D. Schoute and Dr. B. W. T. Nuyens of Amsterdam, vice-presidents; Drs. J. E. Kroon of Leiden, and J. B. F. van Gils of The Hague, secretaries; Dr. F. W. T. Hunger of Amsterdam, treasurer.

The Congress was opened by Prinz Hendrik, who attended several of the Congress functions. After addresses from the official delegates, a visit was paid to Boerhaave's tomb in the neighboring church of St. Peter. A reception was then held by the Burgomaster and Council in the historic town hall, presented to the city after its heroic defense against the Spaniards. In the evening, Dr. Ariens Kappers, the well-known neurologist of Amsterdam, gave an address on "A historical review of the therapy of nervous and mental diseases and its present condition."

At the first scientific session an interesting group of papers on primitive medicine were presented. After lunch the Congressists repaired to the Laboratory of Physics to hear an account of s'Gravesande, the Musschenbroeks and the early school of physic in Leiden by Dr. Crommelin; and examined a fine collection of physical and medical instruments that had been brought together for the occasion. At the afternoon session, in praise of Boerhaave, a number of interesting details were brought out about the great man, after which a reception was held at 31 Rapenburg, the house in which he lived many years and died. The witty and polyglot speech by the host, M. Fokker, was a noteworthy achievement and characteristic of the country. At the evening session, the life and work of Leeuwenhoek was reviewed together with some newly discovered details about his residence at Delft.

The Wednesday sessions at the University were on a variety of subjects that are listed in the program. In the evening the official reception held by the government in the Ministry of Public Instruction at the Hague was largely attended and unusually successful.

Particularly pleasant to American members was an extemporaneous meeting held to lay a floral wreath at the heroic sized Boerhaave statue in front of the Medical School. Dr. William Welch, who had been asked as the "doyen" of the occasion to make some remarks, gave a characteristic and matchless talk, in which he appraised Boerhaave's position, and i.a. traced his direct influence on American Medicine via Edinburgh.

The Amsterdam portion of the Congress was begun on Thursday at the University with a session on Dutch medicine, followed in the afternoon by a truly remarkable medico-historical exhibit in the city museum. Over 2000 items (paintings, engravings, sculptures, medals, etc.) had been gathered from all over Holland, individuals and museums loaning their finest treasures, with a result unequalled in quality throughout the world. The only drawback was the paucity of time available for its examination. "The Physician in Caricature" was the subject of the evening conference by M. C. Veth, with numerous lantern slides from his well-known book on the subject.

The Saturday excursion on the Zuyder Zee to Enkhuizen and Volendam was carried out according to schedule, in spite of an unusually boisterous wind and the Congress closed that evening with the customary banquet.

The next Congress will be held in Rome in 1929, under the presidency of Dr. Capparoni.

The scientific program follows:

Lundi, 18 *Juillet.*

15 h. Séance d'ouverture dans la grande salle de l'Université de Leyde.

16.30 h. Visite au tombeau de Boerhaave dans l'église de St. Pierre.

17 h. Réception à Hôtel de Ville offerte par Monsieur le Bourgmestre et les Membres du Conseil-municipal de Leyde.

20.30 h. Conference du Dr. ARIËNS KAPPERS dans la "Gehoorzaal": Aperçu historique de la thérapie des maladies nerveuses et mentales et son état actuel.

21.30 h. Réception par le Comité exécutif du Congrès. Exposition d'affiches.

Mardi, 19 *Juillet.*

9 h. Séance. Université.

Dr. M. A. Van Andel: Folk medical themes in myths, legends and folk tales.

Prof. A. W. Nieuwenhuis: Die Auffassungen der Primitiven über das Geschlechtsleben des Menschen.

G. Nijpels: Quelques mythes et légendes.

Dr. R. Neveu: Les médecins et l'opinion publique à l'époque Romaine.

Dr. Angelique Panayotatou: Terres cuites d'Egyptes et Maladiéf (d'après les Statuettes du Musée greco-romain d'Alexandrie).

Prof. W. Haberling: Sportärtzliches aus dem Altertum.

Prof. Capparoni: Une copie manuscripte du: "Quattuor humoribus corporis humani" de l'Archivesque afanus de l'école de Salerne.

Dr. W. Szumonski: Sur un talisman de Cagliostro.

Dr. J. H. Lulofs: Antike Medizin und Philosophie (Eine aphoristische Skizze).

Dr. F. C. Unger: Foes et Littré.

14.30 h. Discours du Dr. C. A. Crommelin dans le Laboratoire de Physique: "Les Musschenbroek."

15 h. Visite à l'exposition d'instruments de physique des célèbres physiciens Néerlandais du 18e siècle.

15.30 h. Séance. Laboratoire de Physique.

Dr. C. J. S. Thompson: Boerhaave's prescriptions for some English patients.

Prof. A. Castiglioni: Boerhaave en Italie.

Dr. E. Darmstaedter: H. Boerhaave's Briefe an J. B. Bassand.

Prof. M. Laignel-Lavastine et Dr. Jean Vinchon: Les aphorismes de Boerhaave traduits par la Mettrie.

Dr. J. G. DeLint: Discours commemoratif de Boerhaave.

17 h. Réception par Mr. et Madame Fokker dans la maison de Boerhaave.

20.30 h. Séance. Laboratoire de physique.

Dr. A. Schierbeek: Neues aus dem Leben Leeuwenhoeks.

Dr. W. H. Van Seters: La vie et les oeuvres de Leeuwenhoek, Projections.

Mercredi, 20 *Juillet.*

9 h. Séance de projections Université.

Dr. Fr. B. Kilmer: Dr. Joh Matthaeus Faber, The monographist on Belladonna and allied Solanums.

Dr. V. Torkomian: L'histoire de la plante anthelmintique "Kousso."

Prof. M. Neuburger: Robert Boyle's Schrift über die Spezifischen Arzneimittel.

Dr. Alfr. Schmidt: De apothecarum origine.

Dr. Osc. Van Schoor: La déontologie du pharmacien aux siècles passés.

Dr. H. Cohen: Les titres-planches de quelques anciens herbiers et pharmacopées, éditées en Hollande.

Dr. J. D. Rolleston: St. Blaise: Physician and martyr.

Prof. H. E. Sigerist: St. Sebastian.

Dr. M. Meyerhof: Die Anfänge der arabischen Ophthalmologie.

Dr. H. Weve: Bijdrage tot de geschiedenis van den bril in de Nederlanden, geput uit de beeldende kunst.

10.15 h. précises. Réunion des *dames*-congressistes à la gare du tramway électrique pour

une excursion à la Haye. Visite du Palais de la paix et du Musée "Mauritshuis."

14 h. Séance. Université.

Dr. P. Delaunay: L'évolution philosophique de l'iatro-mécanisme. De Descartes à Boerhaave. De Leibnitz à Cabanis.

Prof. K. Sudhoff: Genetische Zusammenhänge und regionale Bedingtheilen in der Medizin des XII und XIII Jahrhunderts.

Prof. P. Ménétrier: Un inédit d'Andral sur l'histoire de la Médecine.

Dr. A. Da Silva Carvalho: Notice sur quelques manuscrits très anciens de médecine.

Dr. J. Fritz: Medizinische Bücherschätze Lembergs im XVI, XVII Jahrhundert.

Dr. J. E. Kroon: Le premier professeur en médecine à l'Université de Leyde.

Dr. V. Bugiel: L'opuscule médiéval: "Dialogus de morte" et son intérêt pour l'histoire de la médecine.

Dr. A. F. C. Van Schevensteen: Quelques ambulants à Anvers à la fin du 16e siècle.

20 h. précises. Départ pour la Haye en extra-tramway, offert par le Cercle des médecins de la Haye.

21 h. Réception du Gouvernement Néerlandais dans le Ministère de l'instruction publique, des beaux arts et des sciences, Bezuidenhout.

23 h. Départ en tramway pour Leyde, Halte: Boschbrug.

Jeudi, 21 *Juillet*.

8.50 h. Depart de la gare de Leyde pour Amsterdam par train, offert par la Direction des chemins de fer Néerlandais.

9.46 h. Arrivée à Amsterdam.

10.30 h. Séance. Université d'Amsterdam.

Dr. Fr. Lejeune: Die Entwicklung der Anatomie in Spanien kurz nach Vesal.

Dr. Le Roy Crummer: Van Calcar's original drawing for the title page of Vesalius' Fabrica.

Dr. F. M. G. De Feyfer: Ein unbekanntes Bildniss des A. Vesalius.

Dr. E. Ebstein: Hollands Verdienste um die Lehre von der klinischen Thermometrie.

Dr. J. W. Courtney: Some Dutch physicians who have distinguished themselves in America.

Dr. M. Fosseyeux: Les établissements hospitaliers de Hollande vu par un Français.

15 h. précises. Visite à l'Exposition médico-historique dans le Musée de la ville (Musée Suasso). Discours du: Dr. B. W. Th. Nuyens: L'Enseignement d'anatomie, la corporation des chirurgiens d'Amsterdam et les tableaux d'anatomie.

16.45 h. précises. Réception par Monsieur d'-Bourgmestre et le Conseil-municipal le Amsterdam à Maison Couturier.

Vendredi, 22 *Juillet*.

9 h. Séance. Université.

Dr. A. Guisan: A quand remonte dans le canton de Vaud la première docimasie pulmonaire.

Prof. E. Jeanselme: L'oeuvre médicale de Jacob De Bondt.

Dr. A. C. Klebs: A Catalan Plague tract of April, 1348.

Prof. J. J. G. Tricot-Royer: De quel mal les lépreux du Brabant êtaient-ils atteints?

Dr. P. Diepgen: Emil Noeggerath, Anlässlich der 100. Wiederkehr seines Geburtstages am 5 October 1927.

Dr. Dubreuil-Chambardel: Les origines tourangel les de Descartes.

Dr. A. Fern, de Alcalde: Sorapan de Rieros en la Escuela de Guadelupe. Viage del Dr. Mündsen por la Espâna del Siglo XV, y observaciones suyas relacio nadascon les intereses de la medicina.

Dr. Edw. B. Krumbhaar: The second William Oliver and the Bath Biscuit.

Dr. H. P. J. Renaud: Etude sur le Mustacini d'Ibn Beklàrech, médecin juif de Saragosse au Xe siècle.

Assemblée générale de l'Association Internationale d'histoire de la médecine.

10.30 h. précises. Réunion des dames-congressistes à l'Université pour visiter le célèbre atelier de taillerie de diamants de Monsieur Asscher et le "Rijksmuseum."

14 h. précises. Séance. Université.

Dr. V. Robinson: Teaching of medical history in the United States.

Dr. Ch. Greene Cumston: The origins of medical instruction in the United States of America.

Mr. J. Hérissay: Les médecins devant le tribunal révolutionnaire de Paris (1793–1794).

Dr. Lilian Lindsay: Worms in the Teeth.

Dr. A. Van Doninck: De geestesverpleging te Gheel in vroegere tijden van af 1200–1850.

Dr. J. J. Van Der Kley: Schroeder van der Kolk's boek over krankzinnigheid, als voorbeeld van eenvoudige, degelijke Nederlandsche wetenschap.

Dr. A. C. A. Hoffman: De heksenwaag te Oudewater.

Dr. P. Courbon: Les vacances de Pinel.

Dr. Legendre: Un poème de Piorry.

20.30 h. précises. Réunion au "Bugerwacht," Singel 548.

Conférence de C. Veth: Les médecins en caricature (projections lumineuses) offerte par le Cercle des Médecins d'Amsterdam.

Samedi, 23 Juillet.

8.30 h. précises. Excursion en bateau à vapeur à la ville d'Enkhuizen par la mer méridionale. Départ: De Ruyterkade, derrière la gare central, Zaandamsche Steiger No. 11.

11.30 h. Conference du Dr. J. B. F. Van Gils: Une relique d'une corporation de chirurgiens et pharmaciens.

12.30 h. Réception par Monsieur le Bourgmestre d'Enkhuizen à l'Hôtel de ville. Visite à l'ancienne "chambre des chirurgiens."

2 h. Déjeuner à bord du Bateau.

Visite au village pittoresque de Volendam, où on prendre le thé.

20 h. précises. Banquet de clôture au Pavillon: "Vondelpark."

E. B. KRUMBHAAR.

BOOK REVIEWS

Four Thousand Years of Pharmacy, an Outline History of Pharmacy and the Allied Sciences. By Charles H. LaWall, ph.m., phar.d, sc.d., f.r.s.a., Prof. of Theory & Practice of Pharmacy & Dean, Phila. College of Pharmacy & Science. Phila., J. B. Lippincott Co., 1927.

Pharmacy may be regarded as the oldest of the various branches of medical science, far antedating anatomy, physiology and the other fundamental auxiliary sciences upon which we base our medical knowledge. It arose in the primal instinct of man to seek relief in sickness or pain from various natural materials besides his appeals to magic or supernatural measures. Dr. LaWall begins his work by a concise but most interesting review of the pharmacy of the Egyptians, Babylonians and Assyrians as revealed in tablets, inscriptions, papyri, etc., showing how much real pharmaceutic knowledge was possessed by these peoples. He admits that our sources of knowledge regarding the state of the science among other ancient races, such as the Hebrews and the Chinese is much less complete but there is evidence that they at least had a class of professional drug preparers and hence some kind of pharmacal science.

Chapter II is devoted to the history of Pharmacy during the centuries of Greek, Roman and Alexandrian civilization. In a brief but poignant summary of the destruction of various famous libraries containing the wisdom of these ages the Author shows what a terrible loss the modern world sustained through the wicked religious zeal of the Christians and Mohammedans. The wonderful collections of manuscripts at Alexandria destroyed on various occasions; the 80,000 Arabic manuscripts burned at Granada by Cardinal Zimènes, and the wholesale destruction of supposedly heretical or pagan books by the Inquisition contained a literature which would have enlarged our knowledge of ancient science far beyond its present limits. Dr. LaWall sums up the contributions made to pharmaceutical science by the famous Greeks and Romans who from Hippocrates to Galen sought to achieve knowledge by scientific methods. He then shows how we owe the preservation of the fruits of their labors to the Arabians, who from the sixth to the thirteenth century were the torchbearers of the scientific world. As might be anticipated this is one of the most interesting chapters in the book. The Arabians were the originators of alchemy, the parent of chemistry, and the latter science yet preserves in its nomenclature a great quantity of instances of its Arabian origin. Unfortunately their real medical knowledge derived from the Greeks through the Nestorians, was contaminated by the astrology and magic which they imbibed from the Egyptians. Arabian mysticism developed to a peculiar extent the belief in the magic properties of certain substances or even written words or formulae, amulets and talismans. In spite of such unfortunate proclivities they did much for real science by their knowledge of the properties of various mineral and vegetable substances, and their skill in making preparations of new substances from them.

During the Medieval period practically the only traces of learning in Europe are to be found in the Benedictine monasteries. Monkish medicine never amounted to much because it was too deeply tinged with superstitious belief in the efficacy of relics and saints to produce miraculous cures. The monks did introduce a good many herbs into medicinal use, and as LaWall points out the names of some of them, such as rosemary and St. John's wort remain in the pharmacopieas of the present day. They compiled herbals and leech books which represent the only medical writings for many years. LaWall describes the work of Gerbert, Pope Sylvester II, and of Constantinus Africanus, and the beginnings of a new medical science at Salerno. From the time of Roger Bacon to the fifteenth century we find a slow but steady increase in the pursuit of science and LaWall notices the various antidotaries and other books which were harbingers of better things to come.

During the fifteenth century alchemy was on the top of the wave. LaWall describes the work of the mysterious Basil Valentine and his numerous emulators who while seeking various elixirs of life and studying how to transmute base metals into gold laid the foundations of modern chemistry. He calls the sixteenth "The Glorious Century in Pharmacy" because in it pharmacy really came into its own. We would direct attention to the excellent method by which the Author shows how the various epochal events of the fifteenth century led to the wonderful scientific expansion of the sixteenth. Dr. LaWall is evidently a profound student of general history as well as a skilled historiographer. It is to this that we owe the great interest with which one follows his story, a connected well told historical narrative, not merely a string of events and a jèjeune list of personalities. His chapters on the history of pharmacy in the sixteenth, seventeenth and eighteenth centuries are really a most notable contribution to the history of the period, general as well as medical. In these centuries modern chemistry and pharmacy finally emerged from the welter of superstition and empiricism in which they had long wallowed and became exact sciences. Chapter x deals with the remarkable achievements of the pharmacists of the nineteenth century and gives an adequate account of the early history of pharmacy in the United States. The book concludes with some excellent bibliographical notes for collateral reading and a valuable chronological table.

Dr. LaWall has made a most notable contribution to the literature of medical history. His book is not only invaluable for reference on many points which are apt to be omitted by the general medical historian but his material is so well arranged, his style is so good that it is a recreation to read it. The work is profusely illustrated by well-chosen plates.

FRANCIS R. PACKARD.

MASTER MINDS IN MEDICINE, AN ANALYSIS OF HUMAN GENIUS AS THE INSTRUMENT IN THE EVOLUTION OF GREAT CONSTRUCTIVE IDEAS IN THE HISTORY OF MEDICINE, TOGETHER WITH A SYSTEM OF HISTORIC METHODOLOGY. By John C. Hemmeter, M.D., PH.D., SC.D., LL. D. Introduction by Karl Sudhoff, M.D. N. Y. Medical Life Press, 1927.

This most scholarly volume is the output of one who possesses in the highest degree the qualifications which Sudhoff states in his Introduction are most essential to success in the medical historian. Dr. Hemmeter's career as a scientist and physician long ago placed him in the van as a gastro-enterologist and his deep erudition and philosophic insight has been shown in the many contributions he has made to the history and the cultural aspects of medicine. As Sudhoff says, the medical historian who is not likewise a scientific specialist often misses the mark, instancing the history of ophthalmology by Hirsch, one of the foremost medical historians of Germany, but not an ophthalmologist, as contrasted with the magnificent history of the same subject by Julius Hirschberg, a distinguished ophthalmologist as well as an excellent historian. This implies, of course, that a truly scientific specialist is not only familiar with the contemporary and historic aspects of his own specialty, but as he should be, *en rapport* with the advances and fundamentals of all the other branches of medical science. Although Dr. Hemmeter in a generous spirit points to the excellent contributions to medical history made by some laymen, citing the writings of Tollin, Gompertz, Ebers, Haupt, etc. as instances, nevertheless we believe that Sudhoff's view is correct in the main, and we cannot agree with Hemmeter's view that better medical history has been "written by trained historiographers that were not clinicians, than by the professional clinician himself."

The first seven chapters are devoted by the Author to a most thorough study of the methods of writing medical history, its sources, functions, and philosophy. They are by far the most important contribution to this subject which has yet been produced in this country and it is to be hoped will be read and inwardly digested by all those who are engaged in writing or teaching it. Dr. Hemmeter has evidently studied most thoroughly the methods employed by general historians and the various authorities who have in recent years endeavored to formulate certain underlying principles upon which to base a science of history. He quotes liberally from Bernheim, Cheney and others, accompanying his quotations by illuminating discussions of the applicability of their ideas to medical history. There is an immense amount of invaluable material in these seven chapters, too much in fact to permit of close analysis in the limited space of a review. They cover the entire ground and it is to be hoped will stimulate their readers to study the proper methods to be employed by the would be medical historian if medical history is to be placed on anything like the plane of general history. As Hemmeter says heretofore medical historiography has been altogether too haphazard and now that its importance has become so generally recognized it behoves its disciples to discipline themselves so as to be able to represent it properly. We know no better preparation for this purpose than a careful study of the present book. After pointing out that advances in medicine have never been the result of collective effort on the part of masses of people, Hemmeter states that therein lies the reason why he has devoted this book to a description of the achievements of a selected few of the Master Minds, to whose intellect and energy our present knowledge of medicine is due. These biographical sketches are excellent illustrations of how the employment of a correct method more than doubles the value of what in ordinary hands might be simply a biographic record of no scientific value. They are also written in a sympathetic spirit which greatly enhances their value, making the reader unconsciously feel the spell of the personality under discussion. The strictly biographic material is interspersed with chapters dealing with certain historic medical events, such as the Discovery of the Circulation of the Blood, the United States Army Yellow Fever Commission and the Transmission of Yellow Fever, etc.

Of especial interest are chapters XV and XVI dealing with the investigation into the transmission of the United States Army Yellow Fever Commission and particularly with the work of Major James Carroll and Dr. Henry R. Carter. Hemmeter was in close personal contact with both of these men and is thereby enabled to contribute some original matter to the discussion of their work. Joseph Janvier Woodward, the United States Army Surgeon who edited the medical division of the "Medical and Surgical History of the War of the Rebellion" is deservedly honored by a sympathetic account of his immensely valuable labors, and another surgeon in our army, William Beaumont, is the subject of another chapter.

Dr. Hemmeter's chapter on The History of the Circulation of the Blood will certainly not meet with the full approval of the many who are disposed to elevate Harvey on the highest pedestal for his "discovery" of the circulation. Hemmeter believes that the work of Servetus, Realdus Columbus, and Cesalpino paved the way, and he more than intimates that Harvey deliberately concealed his knowledge of their findings in order that he might have sole credit. He praises Realdus Columbus most highly and considers that Sir Michael Foster in his "Lectures on the History of Physiology" has treated him with injustice. Dr. Hemmeter bases his conclusions on the writings of Ceradini and other Italians whom he feels have proved that Columbus was really entitled to priority in demonstrating the impermeability of the cardiac septum, and that he also discovered the lesser circulation himself, not stealing the idea from Servetus, as Foster accuses him of doing.

Hemmeter's three chapters on Leonardo da Vinci are of much interest. He begins by demonstrating the absolute absurdity of the views emitted by Freud on the psychology of Leonardo. This is a quite perfect bit of analytical criticism. Freud has declared that Leonardo had an obsession that he was conceived by a vulture basing this assumption on the story that one of Leonardo's earliest recollections was of a vulture thrusting his tail into his mouth. In the famous group of "St. Anne" painted by da Vinci, Oscar Pfister thinks the peculiar arrangement of the robe of St. Anne in the picture represents a vulture with its tail towards the mouth of the child. Hemmeter reproduces the original picture and the diagram by which Pfister tried to bring out his idea. The reviewer agrees with Dr. Hemmeter that it is very hard for the average mortal to find the vulture in this puzzle picture. Around the vulture idea Freud has built up a whole series of misconceived and ill-begotten theories to prove that Leonardo had a sexual love for his mother, accompanied by an intense hatred of his father, the latter being shown by the entry in Leonardo's journal that "my father" died, instead of "my *poor* father," indicating in Freud's opinion that the son was in rivalry with the father for his own mother's love. Hemmeter also most successfully demolishes Whitby's baseless assertion that Leonardo was a victim of homosexuality. These chapters should be read carefully not only for the light they throw on Leonardo but for the glare in which they show up the absurdities into which psychoanalysts fall when they carry their theories to the nth degree.

There are several typographical errors which should be corrected in any reprinting of this book. On page 234 the date of publication of Cesalpino's book "Quaestiorum medicarum libri II," is incorrectly stated as 1563, instead of 1593, and on page 697 the date of Galen's death is given as 201 B.C. instead of 201 A.D. The book is very excellently made and contains a number of very handsome and appropriate illustrations.

FRANCIS R. PACKARD.

THE MEDICINE MAN, BEING THE MEMOIRS OF FIFTY YEARS OF MEDICAL PROGRESS. By E. C. Dudley, M.D., LL.D., Ex-President American Gynecological Society; President Emeritus of Northwestern University Medical School, etc. New York, J. H. Sears & Company, Inc., 1927.

As implied by its title, this book is autobiographical, and if it had no other claim, it would, nevertheless, attract a large number of readers outside of the profession of medicine, to say nothing of the Doctors to whom the name of "Dudley" has been a professional household word for years, though those physicians who have been fortunate enough to know the author personally may not agree with his claim of being a natural pessimist. Certainly, this book does not support any such claim.

To describe this volume simply under the heading of a biography, is to give it much less than its due. It is in truth biographical, but in the words of the author, it is not a studied record or a self history, but is really a "series of short stories, without too much regard for the rhetorical law of unity." From the beginning to the end of it, the book is delightful reading, especially in that few doctors, now living, have passed through the wonderful transition period, not only in medicine, but in the conditions of life in general, which the pages of this book portray in such a charming manner. It is to be noted that on the title page of the book is stated "Memoirs of Fifty Years of Medical Progress," not Medical Practice. It is, of course, a truism to say that during the life of this one man, medicine made more progress than it had during the previous several hundred years, and it is also true that a similar change or development has occurred in the thoughts and attitudes of the human race in the same period. This book, beginning as it does, with a series of word pictures of the author's early life, photographs the life of that time in a most vivid manner. Indeed, if only for his description of his early life at Dartmouth College, and his medical student days at Yale, and in New York City, the book would be well worth reading.

Too much cannot be said in commendation of the spirit in which the book has been written, the genial, optimistic attitude is one of its most pleasing attributes. From the opening chapter to the final word, there is a complete absence of envy or malice. That the author, in common with all human beings, has had heartaches and disappointments, professionally and otherwise, can be accepted without question, but neither can be proven from the pages of this book.

The advice of the reviewer to readers of this book is not to open it if they have not ample time to complete it at one sitting, since his experience is that it is one of the most difficult books to leave unfinished that he has had the pleasure of reading in a long time.

WILLIAM R. NICHOLSON.

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